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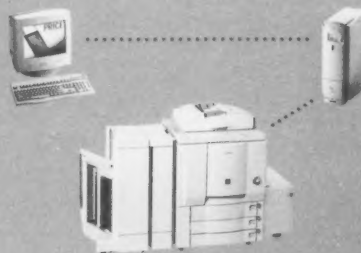
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POWER PLAY

CIOs Cecil Smith of Duke Energy (left) and John Keast of PG&E lead IT groups that will be key players in a head-to-head competition in the deregulated utility industry. Page 46

PAUL GATES



FLASHBACK 1991

When Linus Torvalds (above) began working on Linux in 1991, he didn't set out to compete with the likes of Microsoft - it was just a hobby for the University of Helsinki student. Page 78

BY THE ASSOCIATED PRESS



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OCTOBER 25, 1999

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THE IDEA OF DOING ANY RADICAL CHANGES TO OUR MAINFRAME SYSTEMS IN MID-DECEMBER JUST SEEMED PLAIN STUPID THIS YEAR.

DAN KABERON, PARALLEL SYSPLEX MANAGER AT BENEFITS OUTSOURCER HEWITT ASSOCIATES, ON WHY MANY USERS MAY HAVE HELD OFF HIGH-END SERVER PURCHASES, CAUSING IBM SERVER SALES TO TANK IN ITS LATEST FINANCIAL REPORT. SEE PAGE 1.

AT DEADLINE

SEC Orders Net Links

The Securities and Exchange Commission (SEC) last week issued an order directing the four U.S. options exchanges to develop a plan to electronically link their markets. Under the SEC order, the American Stock Exchange Inc., Chicago Board Options Exchange Inc., Pacific Exchange Inc., and Philadelphia Stock Exchange Inc. have 90 days to submit a proposal to create an inter-market linkage plan for options traded on multiple exchanges.

Microsoft Ruling to Be Issued on 'a Friday'

Microsoft Corp. antitrust trial Judge Thomas Penfield Jackson may be trying to lessen the stock market impact of a key part of his decision in this historic case by scheduling its release on "a Friday" after the close of the markets, legal experts said. Judge Jackson said he would release the first part of his two-part decision on a Friday. Attorneys in the case will be given the decision at 4:30 p.m., and the decision will be released to the public at 6:30 p.m.

Amazon Sues Rival

Online retailer Amazon.com Inc. is suing rival Barnesandnoble.com LLC for allegedly copying Amazon's 1-Click shopping technology. The feature allows customers to purchase items without re-entering their shipping and billing information every time they make a purchase. The suit, filed last week in U.S. District Court in Seattle, alleges patent infringement and seeks a halt to the defendant's "copycat" feature, as well as unspecified damages.

Short Takes

Leveraged buyout specialist KOHLBERG KRAVIS ROBERTS & CO. in New York has teamed up with GS CAPITAL PARTNERS in New York to acquire SIEMENS NIXDORF RETAIL AND BANKING SYSTEMS GMBH, based in Paderborn, Germany, for \$800 million. ... COMPAQ COMPUTER CORP. is scheduled today to launch a series of think clients that run on Windows CE, as well as wireless and laptop computers. The T1000 thin client ships next month for \$626.

Congress Offers No Worker Relief

No action expected on H-IB, tax credits until next year

BY PATRICK THIBODEAU
WASHINGTON

CONGRESS WON'T be offering help, at least in the short term, to companies in need of high-tech workers or tax credits for training people in high-tech jobs.

Legislators aren't expected to take any action on proposals to raise the H-IB visa cap until sometime next year and may not act before this fiscal year's cap is reached.

Moreover, a coalition of trade associations seeking congressional support for job

training credits was told last week by a White House official that the tax credit plan had problems and wouldn't be considered until next year.

At a Senate hearing last week on the H-IB visa issue, Susan Williams DeFife, CEO of WomenConnect.com Corp., a Fairfax, Va.-based news and career information service, testified about the information technology labor crunch. She said for an emerging company, "one unfilled tech position can severely impact our ability to grow."

DeFife said she spent months trying to fill one system administrator opening until she found a young woman from Mexico who was completing course work in the U.S.

Hiring her meant going through the H-IB visa process, and the company had to wait

another four months before such visas were available.

The current 115,000 cap on H-IB visas could be reached early next year — and perhaps sooner if the Immigration and Naturalization Service (INS) issued too many visas in the fiscal year ended Oct. 1. The INS is now auditing its work.

High-tech industry trade groups have been pushing for an increase in the H-IB cap and for job training tax credits.

Rep. Jim Moran (D-Va.) and Sen. Kent Conrad (D-N.D.) earlier this year introduced bills that would provide tax credits of up to \$6,000 per year

for job training.

Moran, speaking at a forum on the tax credit last week, said incentives are needed because while it's in the country's interest to provide training, it's not necessarily in a company's interest to pay for it.

A company can invest in training an employee only to lose that person "to another company that isn't willing to make that investment," he said.

But Tom Kalil, a senior director at the president's National Economic Council, said the chances of quick approval of the tax credits are slim. He said administration officials are concerned that the credit rewards companies for training they are already doing.

The "best opportunity" to move forward on this legislation will be for the industry to make "a stronger case" to have it included in next year's budget, Kalil said. ■

Standards Body Debates Internet Wiretapping

BY ANN HARRISON

Members of the Internet Engineering Task Force (IETF), a worldwide standards-setting body, are preparing to debate whether Internet telephony protocols should support the ability for law enforcement agents to conduct wiretaps.

The U.S. government already requires that telephone companies configure their networks to let law enforcement agencies tap phone calls. Several IETF working groups are designing protocols to support telephony over IP networks; that's where the wiretap question came up.

The FBI says it wants the IETF to develop this technology. It supported the IETF's decision last week to debate the issue at its Washington plenary meeting Nov. 10.

Barry Smith, an agent at the FBI's Digital Telephony and Encryption Policy unit, said that under the current federal wiretap statute, law enforcement officials can show probable cause to a judge and intercept telephone, oral, wire and electronic communications they believe are being used to

further criminal activities.

"When communications are traversing their networks that are facilitating criminal activities, the networks need to be able to support authorized surveillance to make sure public safety is not unnecessarily jeopardized," said Smith. "The standards bodies should provide a standard for this so that [Internet service providers] and manufacturers of equipment for carriers can meet their statutory obligations."

IETF steering group member Jeff Schiller, an MIT network manager, predicted that a majority of the meeting's participants will elect not to build surveillance technology into standards.

"Before you figure out how to do it, the question is, Should you do it?" said Schiller. "The likely scenario that we will see is representatives of phone companies who say, 'We have to do this, and we want to do this in a standardized fashion because it saves money,' vs. the libertarian factor that says, 'Evil, evil, evil.' The only question is to what ratio the people in the room are." ■

Win2K Hardware Unveiled

BY DAVID ORENSTEIN

Unisys Corp. this week plans to announce one of the most scalable Windows server systems based on Windows 2000 and the Blue Bell, Pa., company's proprietary Cellular Multiprocessing (CMP) technology.

In a broader electronic-business announcement planned for Wednesday in New York, Unisys will unveil plans for a server that analyst Joe Clabby at Aberdeen Group Inc. in Boston said has the potential to approach 100,000 transactions per minute. Earlier this month, Unisys said its fastest server could handle 40,000 transactions per minute.

The CMP architecture can support 32 Pentium processors and operates by running multiple partitions of any Intel Corp.-based operating system on those processors. Each logical partition essentially acts as a separate machine in a cluster, but the partitions are linked via high-speed switching interconnects that allow the cluster to work as a symmetric multiprocessing system as well.

Unisys customer SuperValu Inc., a \$17.4 billion food distributor and supermarket chain in Minneapolis, has previewed the server. But Allan Klein, director of PC LAN services at SuperValu, said it would be too powerful for the company's current needs.

Because of its distributed structure, SuperValu's headquarters supports only 2,000 of the company's 10,000 users. The Unisys system could consolidate so many Windows application servers that it could end up becoming a single point of failure, Klein said. The company is interested in server consolidation, but not at the expense of some needed redundancy, he said.

Next year, SuperValu will move more of its file and print services from NetWare 4.0 to Windows NT and will consolidate more information technology support at the home office, Klein said. Once those demands on NT have risen, the company may look again at the Unisys system. "Right now, it's overkill," Klein said. ■





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Goldman Crafts Net Strategy for Megarich

Firm said to tap CIO as co-chief of unit

BY THOMAS HOFFMAN

FORGET ABOUT \$8 Internet stock trades. Goldman, Sachs & Co. is crafting an Internet strategy to lure the megarich to invest online with the blue-chip firm.

Sources close to the New York-based brokerage said the firm plans to create an Internet investment unit that will cater to private clients with a high

net worth. Goldman Sachs currently counts 41% of the world's 400 richest people among its customers.

"They're not [trying to become] an eSchwab," said Raphael Soifer, a securities analyst at Brown Brothers Harriman & Co. in New York, referring to Charles Schwab & Co.'s discount electronic brokerage.

A spokeswoman for Goldman Sachs, which has histori-

cally been tight-lipped about discussing its competitive strategies publicly, said the brokerage is examining its online options and therefore it's premature to discuss plans.

Wall Street newsletter "Financial Net News," published by Institutional Investor Inc. in New York, reported in its Oct. 4 issue that Goldman Sachs plans to "roll out a Net brokerage and a mutual fund supermarket" for its rich clients. Sources close to Goldman Sachs confirmed that the

company is developing online investment capabilities for its wealthiest clients but said that an online mutual fund shopping cart isn't part of its plans.

Sources told *Computerworld* that Leslie Tortora, managing director and CIO at Goldman Sachs, has been tapped to co-head the emerging online unit, along with George Walker, another managing director at the company. The company spokeswoman declined to comment on those moves.

Tortora is "one of the best CIOs on Wall Street. She's very client-focused," said Larry Tabb, an analyst at Tower-Group, a Newton, Mass.-based financial services consultancy. He said Tortora made sure that Goldman Sachs was one of the first brokerages to adopt

client-centric technologies in the early 1980s.

While Tabb commended Goldman Sachs for utilizing Tortora's talents, he added that "you can't just have a technology person run an e-commerce initiative — there needs to be a partnership between IT and the business side." That explains why Walker is co-chair of the project, he said. ■

Concord Buys SNMP Agent

BY SAM LAIS

Network monitoring software developer Concord Communications Inc. in Marlboro, Mass., last week announced it will acquire Empire Technologies Inc. in Atlanta for \$31.4 million.

Empire's Simple Network Management Protocol (SNMP) agent for Windows NT and Unix, SystemEdge, handles chores such as network device autodiscovery and disk space monitoring. If disk space is running low, SystemEdge can notify a manager or invoke a script to trim log files to make space available.

Concord's key product, Network Health, collects data from multiple sources, analyzes it and creates reports on topics like network availability and application response time.

An informal relationship between the two companies was formalized in August, when Concord licensed Empire's SNMP agent for inclusion in Network Health.

The marriage should be a happy one for users, said David Passmore, an analyst at Net-Reference Inc. in Sterling, Va. Compiling data on application and network performance can be "like trying to put Humpty-Dumpty together," he said. "What enterprises need is both components."

Empire will continue to operate independently, as a wholly owned subsidiary, said a Concord spokesman. Empire has "a lot of relationships with companies that could be considered competitors of ours," he said. Far from interfering, Concord will encourage such relationships, he said, in hopes that they will create a de facto standard for SNMP agents. ■

Study: Non-IT Skills Affect Project Success

Business, interpersonal skills are critical

BY JULEKHA DASH

Companies that develop their project managers' interpersonal and business skills can improve the chances of a project's success by up to 30% over the next four years, according to a recent report from the Gartner Institute in Eden Prairie, Minn.

Success means the information technology project is delivered on time and on budget.

More than 400 project managers and their supervisors participated in the eight-week study. They said skills such as budgeting, forecasting and risk assessment are non-IT skills contributing to project success.

Some analysts and consultants said that after grappling with complex and costly e-commerce and year 2000 projects, companies are starting to formalize skill requirements for project managers.

"Most IT organizations are in the early stages of developing project managers," said Gartner Institute research director Barbara Gomolski. Moreover, firms have traditionally selected technologists, such as application development managers, for these positions, rather than people from the business side, Gomolski said.

Henry Miller, a project manager at a large telecommunications company in Kansas City,

Mo., said he agreed with the findings. He said that during a recent Y2K project, empathizing with employees who were relocating — at the same time he was making more demands on their time — contributed more to the project's success than "being able to manipulate information in a computer."

And project managers need to make up-front decisions about issues such as whether it's more cost-effective to train employees departmentally or companywide, Miller said.

Though the need for a combination of business and IT skills isn't new, the blend is becoming more business-heavy in the project management world as more projects, particularly in e-commerce, are be-

In the Know

IT project managers need:

- Knowledge of project's impact on business processes
- Ability to communicate risks, expectations and success criteria
- Risk-assessment and resource-management skills

ing driven by businesspeople, said Gopal K. Kapur, president of the Center for Project Management in San Ramon, Calif. ■

United Service Adds Speech Recognition

New software can distinguish 'Boston' from 'Austin'

BY STACY COLLETT

United Air Lines Inc. has deployed new speech-recognition technology that officials said offers faster access to flight and baggage information.

The system is based on speech-activated technology developed by SpeechWorks International Inc., a Boston-based provider of conversational speech-recognition technology. It runs on a platform provided by InterVoice-Brite Inc., a Dallas-based supplier of call automation systems.

United declined to say how much the system cost.

The system builds on technology developed two years ago for United's employee reservations system.

About 50% of United's customers have access to the system, which handles 30,000 calls daily. Callers using the new system can simply state the origin and destination cities of flights and approximate arrival time to obtain the status of a flight or of lost baggage. The system understands the words and gives an answer. Accuracy percentages are in the "high 90s," said Niru Shah, application development manager.

United is among airlines adopting the next generation of voice-recognition technology called "discrete word large vocabulary" software. It recognizes thousands of words

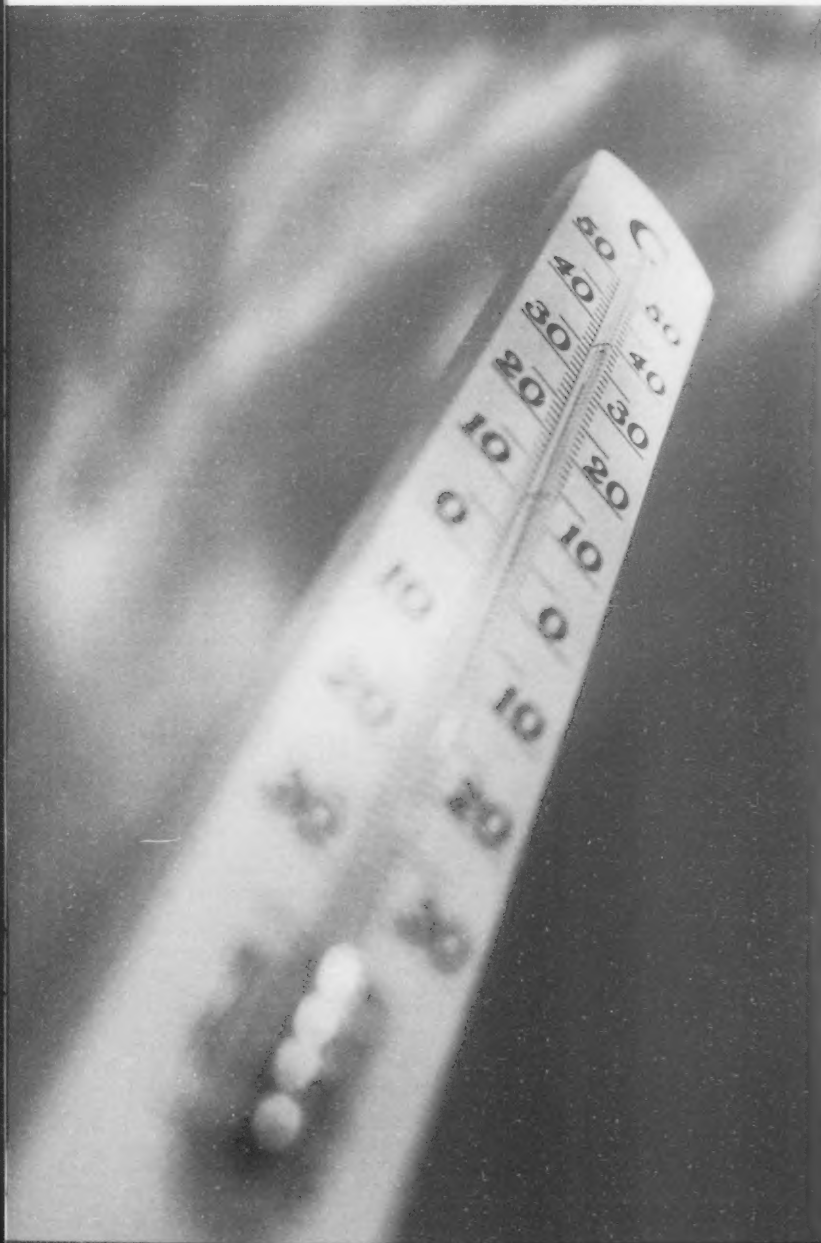
rather than dozens and can recognize a string of words instead of just a "yes" or "no."

The software can tell the difference between "Boston" and "Austin" and recognize that 1400 hours and 2 p.m. mean the same thing, said Brad Friedlander, a principal at Arthur D. Little Inc. in Cambridge, Mass.

Dallas-based American Airlines' automated flight information system also uses voice-recognition technology. "Our accuracy rate is running in the 97% range," said spokesman Tim Smith.

Overall, only a few hundred companies have deployed this type of voice-recognition technology, but interest is growing, according to Jackie Fenn, an analyst at Gartner Group Inc. in Lowell, Mass. ■

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BRIEFS

700-MHz Intel
Chip to Ship

Intel Corp. today will release its Coppermine Pentium III processor to rival Advanced Micro Devices Inc.'s Athlon chip. Coppermine can run at 700 MHz.

Compaq Computer Corp., Hewlett-Packard Co. and IBM have announced support for the new processor in their servers.

GSA Signs Up
AT&T and Verisign

AT&T Corp. and Mountain View, Calif.-based Verisign Inc. received the third contract issued under the General Services Administration's Access Certificates for Electronic Services (ACES) to provide digital certification services to federal government agencies through standard Web browsers.

Prior ACES contracts went to Digital Signature Trust Co. in Salt Lake City and Operational Research Consultants Inc. in Chesapeake, Va.

Cyberthreat
Worries GAO

An official at the General Accounting Office told a Senate subcommittee that a lack of coordination among government agencies has compromised their ability to withstand cyberattacks.

The GAO recommended that Congress consider legislation that defines how leading federal security organizations should coordinate their activities and guide other agencies.

Intuit Adds CyberBills

Intuit Inc. in Mountain View, Calif., said it would integrate Santa Clara, Calif.-based CyberBills Inc.'s bill management service into its Quicken.com Web site. This integration will let Quicken users receive, pay and manage electronic and paper bills in one location, Intuit said.

Quicken.com users can already manage multiple investment portfolios, obtain financial information and comparison shop for mortgages and insurance at the site.

One Last Beta of
Win 2000 to Go

RC3 to be sent to a small percent of testers

BY DAVID ORENSTEIN

MICROSOFT Corp. will issue the third and final release candidate of Windows 2000, RC3, by mid-November before it ships code to manufacturing before the end of the year.

RC3 will be shipped only to several hundred to a few thousand of Microsoft's most strategic beta customers, rather than the roughly 750,000 who have been testing Windows 2000 Professional and Server versions for more than a year, said Craig Beilinson, lead product manager of the operating system.

"The goal of RC3 is to make

sure we've really got the final buyoff before we release it to manufacturing," Beilinson said.

The version, which will be delivered to Microsoft's larger users in the early development and deployment programs, is the sixth prerelease version of Windows 2000 to be distributed. It will help Microsoft ensure that the changes it made based on feedback about RC2, which was released Sept. 15, are stable. Beilinson declined to say what changes are in RC3, however.

"It's just continued clean up, moving toward [release to manufacturing]," said David Crowe, Windows 2000 project leader at Travelers Insur-

ance Co. in Hartford, Conn., which expects to be among those that get RC3. Information technology managers at Prudential Insurance of America Co. in Newark, N.J., said they are also awaiting RC3 but declined to discuss it.

Joe Clabby, an analyst at Aberdeen Group Inc. in Boston, said RC3 is a crucial step for Microsoft in order to ship stable code.

Complex Version

"Microsoft has a huge vested interest in making sure that Windows 2000 does not fall on its face," he said. "This release is one of the most complex versions of NT that they have ever done. This is a huge quality assurance effort. I think it's prudent of them."

Clabby said he expects code

Palm Gives Hand to Enterprise Users

BY MATT HAMBLIN

After a year of promises, Palm Computing Inc. last week unveiled ways to help corporations connect workers who use handheld computers to important server-based data.

At the heart of the announcements made by the subsidiary of 3Com Corp. in Santa Clara, Calif., is Palm HotSync Server software. It will support as many as 2,000 users working concurrently to retrieve information from databases from Oracle Corp. and other leading database vendors. Users could be using either a handheld with the Palm operating system or Windows CE.

Sync Stations

Palm also announced the Palm Ethernet Cradle, which allows data synchronization at 10M bit/sec. with a corporate networked server, bypassing the need to synchronize with a desktop. Corporations could set up sync stations in cafeterias or meeting areas to allow instant connections, analysts said.

Palm will also offer service

and support to corporate customers for annual fees starting at \$25,000.

"It might be a lot easier to deploy handhelds with the HotSync Server from Palm, rather than packaging a system together with other vendors,"

said Eric Gee, project manager at American Medical Response Inc. in Aurora, Calif.

Gee must have a pilot system in place by Jan. 1 for 45 privately employed paramedics in San Mateo, Calif., who will use Palm handhelds to collect pa-

The Windows
2000 Road So Far

NT 4.0	July 1996
NT 5.0 BETA 1	September 1997
NT 5.0 BETA 2	August 1998
NT 5.0 RENAMED WINDOWS 2000	October 1998
WIN 2000 BETA 3	April 29, 1999
WIN 2000 RC1	July 1, 1999
WIN 2000 RC2	Sept. 15, 1999
WIN 2000 RC3	Next month

to be released to manufacturing by the second week in December and shipped to the first users during the last week of the year. ▀

MOREONLINE

For Computerworld coverage of Windows 2000 and links to related pages, visit our Web site.

www.computerworld.com/more

Lawson, PeopleSoft Tread Into Analysis

BY CRAIG STEDMAN

Packaged software that can be used to analyze salaries, employee turnover rates and other human resources data is starting to materialize.

Minneapolis-based Lawson Software Inc. last week announced a set of human resources data analysis applications. PeopleSoft Inc. in Pleasanton, Calif., plans to do the same before the year ends.

Drilling down into human resources data can help businesses make big changes. For example, Wilsons The Leather Experts Inc. cut turnover rates among its store managers by about 20% this year after an analysis showed that the com-

pany was hiring overqualified workers who would quickly get frustrated and quit.

But finding the right data took about six weeks of work, said Russell Edwards-Simpson, director of human resources at Wilsons in Brooklyn Park, Minn. Staffers in his department had to comb through hundreds of paper-based personnel files and write reports to pull data out of the company's Lawson human resources system.

"We had a gut feeling and had to go out and look for [data to back it up]," Edwards-Simpson said. He added that Lawson's new analysis software could greatly simplify that

hunt, although Wilsons hasn't committed to a purchase yet.

Server-based synchronization offers the fastest way to update data and will lower maintenance headaches because software is updated on the server, Gee said. ▀

hunt, although Wilsons hasn't committed to a purchase yet.

The Workforce Analytics package includes data marts for storing information on compensation, head count and turnover, plus about 50 analysis routines that end users can run from Web browsers.

Additional data marts supporting recruitment and benefits data are due in the next few months, Lawson said. By March, Wilsons also plans to integrate human resources benchmarking data compiled by the Saratoga Institute in Santa Clara, Calif., so users can compare their companies with others in 25 vertical industries. ▀

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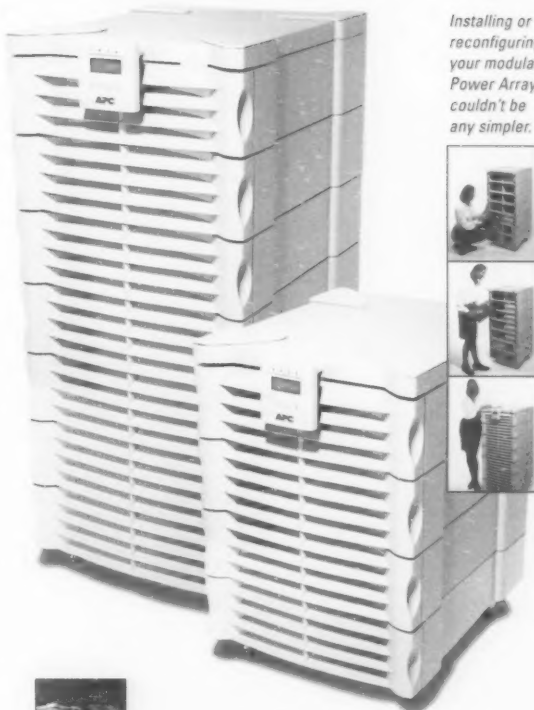
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- Bob Lesher and Charlie Bise, Information Technology, Exel Logistics

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Tools Let Manufacturers Track Inventory, Orders on Web

BY CRAIG STEDMAN

Web-based software that lets process manufacturers open up their inventory, pricing and

order entry systems to customers will debut at a manufacturing conference in New Orleans this week.

Two vendors of process manufacturing applications — Systems & Computer Technology Corp. (SCT) and Ross Sys-

tems Inc. — are in the final stages of developing Java-based add-ons that will let external users check inventories, get

price quotes, place orders and track shipments via the Web.

Malvern, Pa.-based SCT said its browser-based software will be announced this week at a conference sponsored by APICS, an association for production planners and other end users in Alexandria, Va.

Ross Systems in Atlanta also will discuss its plans at the conference and then follow with a formal announcement next month. Both vendors said they're targeting shipments in the first quarter of next year.

Cargill Inc.'s food products unit in Minneapolis is one user that wants to get on board as soon as it's sure the new software is ready. The operation, which uses SCT's process manufacturing software, sees the upcoming Web-based software as a way to provide faster and less expensive service to its customers, said Michael Drazen, director of the unit's information technology group.

Forecasting Demand

Cargill also hopes to use the software to get demand forecasts from customers, Drazen said. The forecasts could then be used to set more efficient production and transportation plans — a key issue for process manufacturers that make hard-to-store liquids and other products in bulk quantities.

For example, Cargill makes oils, corn syrup and flour for sale to other food processors. "We can't store stuff in a warehouse," Drazen said. "When something comes out the end of the line, it has to go right into a railcar or a truck."

Bill Swanton, an analyst at AMR Research Inc. in Boston, said there's a big need for packaged software that frees manufacturers from having to develop their own applications for tracking orders via the Web.

Customers and manufacturers' own sales forces "are beating down the doors of plants to find that information," Swanton said. "But the tricky part of the whole thing, obviously, is security. You can't let one customer see another's data."

Process manufacturers aren't the only ones that are starting to see Web-based applications. Similar products are due to be announced at the APICS conference by vendors, such as Pivotpoint Inc. in Woburn, Mass., and U.K.-based Kewill Systems PLC, of applications for midsize discrete manufacturers. ■

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Global E-Consumer Rules Proposed

Firms: Plan could prompt Web site changes

BY PATRICK THIBODEAU
WASHINGTON

FEDERAL OFFICIALS believe that a set of consumer protection guidelines for e-commerce, developed by an international treaty organization, may help spur trade by fostering confidence. Industry officials don't disagree, but they said the guidelines may be too specific and could ultimately force companies to make Web site changes to comply with them.

For the past two years, representatives from 29 nations, including the U.S., have been working through the Paris-based Organization of Economic Cooperation and Development (OECD) to produce a set of international consumer protection guidelines for e-commerce. That task is nearing completion, and a final set of guidelines may be adopted by year's end.

The intent of the guidelines is to set some common standards for consumer protection across national borders. The guidelines call for the creation of an alternative resolution process, in which an international Better Business Bureau-type organization settles disputes. The guidelines are voluntary, but because OECD policy recommendations are often turned into law by member nations, companies can't ignore them, said experts familiar with this process.

"They are very important to business," said Charles Prescott, a business development official at the Direct Marketing Association in Washington. "They reflect the views of law enforcement authorities, and businesses better pay pretty careful attention to them."

Buyers Beware

But despite some reservations about the current proposals, industry groups said the guidelines will help U.S. businesses in a key respect: The consumer protection laws of the country the buyer is located in won't necessarily apply.

If local laws were to apply,

then U.S. companies would have "set up 160 Web sites to deal with each country, instead of having one Web site that can serve a global market," said Ron Plesser, a Washington attorney representing the Electronic Commerce and Consumer Protection Group, which

includes America Online Inc., Visa U.S.A. Inc., Time Warner Inc. and Microsoft Corp., among others.

For instance, some countries prohibit comparative product advertising, which is legal in the U.S.

Although the issue of which country's law applies in an electronic transaction is unsettled,

the guidelines attempt to fix that legal problem by calling for a process to resolve disputes. "We think that is a good outcome, and we encourage that greatly," said U.S. Federal Trade Commissioner Mozelle W. Thompson. The Federal Trade Commission, however, will still pursue those companies that engage in unlawful

practices, he said.

But Plesser and others said the guidelines may still be too specific, don't allow emerging technologies and don't address services like online auctions. The guidelines spell out how businesses should deal with consumers and handle transactions. But those requirements vary from nation to nation. ■

Global Commerce

Consumer protection recommendations for e-commerce across national borders:

- Advertising and marketing materials should be clearly identified as such
- Businesses should take special care in advertising and marketing targeted at children, the elderly and the seriously ill
- Where more than one language is available to conduct a transaction, businesses should make available in those same languages all information necessary for consumers to make an informed decision

SOURCE: ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT

Net Firms Prepare for FTC Child Privacy Rules

Many sites support online guidelines

BY JULEKHA DASH
AND KIM S. NASH

Guidelines issued by the U.S. Federal Trade Commission (FTC) Children's Online Privacy Protection Act (COPPA) last week drew mostly support from youth-oriented Internet firms, though others questioned how the rules will be enforced.

By next April, companies that collect information on their Web sites from kids under 13 will need to obtain parental consent before they

can disclose that information to third parties or make it publicly available. Parents can respond via fax, mail, a toll-free number, e-mail with a password or a digital signature.

But the FTC has imposed less stringent requirements for the next two years — a "sliding scale" — for sites that plan to use the information internally only. The latter applies to companies that enter children in contests or send an e-mail newsletter to them, for example. In such instances, e-mail authorization is enough, provided the companies follow up to confirm the parent's identity.

Web site operators must also make explicit what they do

with information they collect from children under 13. The penalty for noncompliance could be a fine of up to \$11,000 per violation, the FTC said.

Some companies have been preparing for the ruling. Catherine Davis, a producer at Yahoo!igans, a site for kids run by Yahoo Inc. in Santa Clara, Calif., said the company stopped collecting information about child visitors 18 months to two years ago. For example, kids don't have to register or reveal data about themselves to play Yahoo!igans games. Instead, they choose from a list of preselected screen names, Davis said. "We knew something [from the FTC] was coming down the pike," she said. Yahoo worked with the FTC to formulate the rules.

Mark Reese, chief e-commerce officer at online toy retailer Toysmart.com in Waltham, Mass., said such child-friendly policies may inspire confidence among parents, so he sees the FTC rulings as a boon to Web sites. Burbank, Calif.-based The Walt Disney Co., which funds Toysmart.com, expressed similar sentiments in a statement released Thursday.

But Angel Munoz, president of Dallas-based NewWorld.com Inc., said that although the FTC may enforce COPPA at the corporate level, Internet privacy policies will be difficult to monitor at the personal level.

Though Munoz described getting e-mail permission from parents to enter their kids in computer game contests as "no big deal," he said he fears that tech-savvy kids may find ways to skirt the guidelines. ■

U.S. May Soften Source-Code Export Policy

BY ANN HARRISON

A U.S. Department of Commerce official last week said the Clinton administration may reconsider its restriction on exporting source code for programs using strong encryption.

Many commercial software companies don't publish the underlying source code for their programs because they consider it proprietary information. But an increasing number of businesses are using open-source software, such as the Linux operating system, which makes their source code freely available to anyone.

William Reinsch, an undersecretary of Commerce, said vendors and users of open-source programs such as Linux complained about restrictions on source code after the administration announced last

month that it would allow the export of compiled programs using strong encryption. [News, Sept. 20]

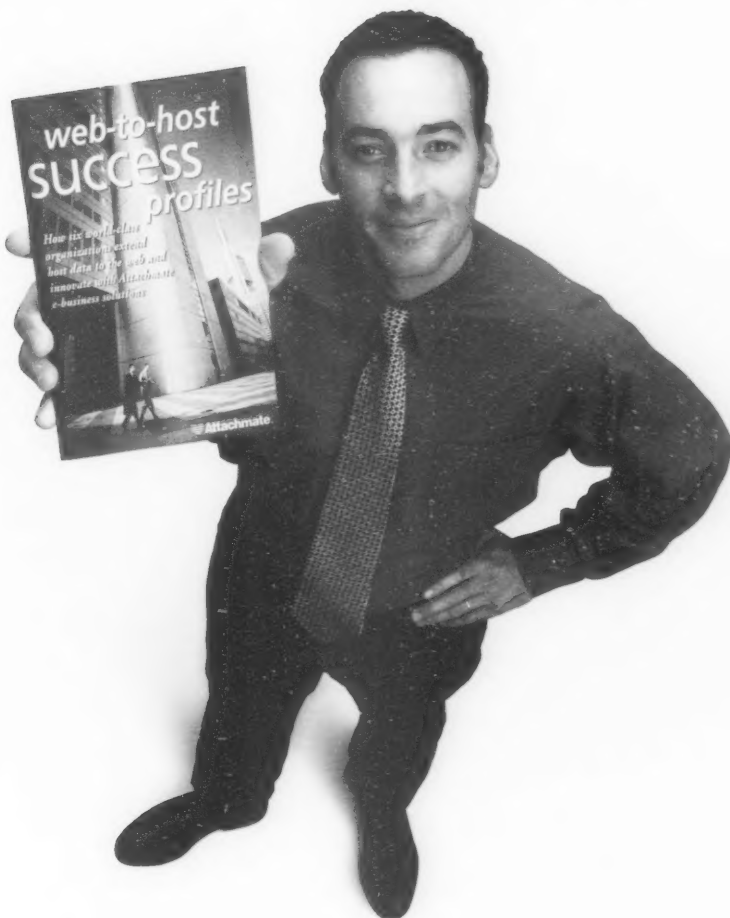
"The Linux issue came up, and we heard from a lot of people about that, and it is causing us to do some additional thinking," said Reinsch.

According to Reinsch, the revised rules scheduled to be released by Dec. 15 would include any revisions to the source code export rules. Current U.S. export restrictions consider posting source code on the Internet a form of export. That hampers U.S. programmers who want to build strong encryption features into Linux or other open-source software.

Paul McNamara, general manager of the enterprise business unit at Durham, N.C.-

based Red Hat Software Inc., which can't export its Linux Secure Web Server with 128-bit encryption, said lifting the source-code ban would have a positive impact on both vendors and customers. He noted that Fortune 100 companies have the money to lobby the Commerce Department for export waivers, but small companies don't have that luxury.

"Encryption technology is becoming a critical component of Internet applications and is essential for protecting people's privacy and the security of their data. Our customers outside of North America don't have access to the same type of encryption technology because we can only ship a weaker version, and this puts us at a disadvantage in terms of our competition," said McNamara. ■



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BRIEFS

Wireless Web Access

AvantGo Inc. announced last week an initiative with other companies to deliver Web-based content to all classes of wireless devices, including handheld computers on the Windows CE and Palm Computing operating systems and smart phones. In a related move, The E-Content Co. took the wraps off X-WAP, Extensible Markup Language-based software that lets Web sites customize the same content for display on a variety of handheld devices as well as PCs, all automatically.

Sun Starts Equity Investment Fund

Sun Microsystems Inc. last week launched a \$200 million equity investment fund. Sun said it plans to target next-generation Internet software, equipment and service opportunities with the fund. Jonathan Schwartz, vice president and general manager of Internet applications, will head Sun's investment portfolio efforts.

Novell Firewall Protects NPR

National Public Radio will implement Novell Inc.'s Border Manager 3.5 firewall, Novell Directory Services for Windows NT 2.01 and NetWare 5.0 to support its 800 users, many of whom are in remote offices. The Washington-based public radio network will create a virtual private network based on the technologies.

Short Takes

AMERICA ONLINE INC. will invest \$800 million in Gateway Inc. during the next two years. Gateway will make a commitment to spend \$85 million marketing its products and services through AOL's channels. . . . NETMANAGE INC. has agreed to purchase Wall Data Inc. for \$94 million, which will bring Wall Data's Rumba PC-to-host product into the NetManage fold. . . . LEVEL 8 SYSTEMS INC., a vendor of enterprise application integration software, last week said it signed a deal to buy integration software maker Template Software Inc. for \$49 million in cash and stock.

Government Seeks Vendor Accountability

Security directive means agencies will hold vendors responsible for troubled software

BY PATRICK THIBODEAU
ARLINGTON, VA

FEDERAL agencies, which have begun spending millions to upgrade information security in response to a presidential directive, said protecting computer networks will also mean finding ways to hold software vendors accountable for the quality of their products.

John Gilligan, CIO at the U.S. Department of Energy, said users have to focus attention on better defining expectations and enforcement of warranties for commercial software.

Vendors must "provide products that will either be free from certain types of vulnerabilities or reliability problems, or they will have financial liability," said Gilligan, speaking

last week at the U.S. Department of Commerce's National Information Systems Security Conference.

Federal agencies were ordered by President Clinton last year to do what's necessary to protect critical systems from information security threats. The order set off a scramble among agencies to develop security plans and seek money from Congress.

But some issues aren't easily addressed. U.S. agencies are becoming "increasingly more reliant on commercial off-the-shelf products," said Christopher Mellon, deputy assistant secretary of defense for security and information operations.

And it's difficult to tell, in some cases, where commercial software code "was written, what its heritage is and to even

know what it is you are buying," he said.

Defense and other federal agencies are currently working on plans to improve information security through training, vulnerability testing and system improvements that include developing incident-response teams to tackle security threats. Agencies are also improving training for systems

administration workers.

But Congress is balking on funding. The Commerce Department is seeking about \$79 million for its information security work, and the Department of Energy, which has been plagued by an espionage scandal this year, asked for about \$35 million this year, which it hasn't yet received.

Federal officials said security funding is cost-effective. One security incident can cost as much as \$500,000 to repair.

As with private industry, security threats posed by disgruntled employees are greater for government systems than attacks from outside. ▀

President's Orders

Federal CIOs are fighting Congress for the money they need to protect the critical systems of federal agencies. President Clinton ordered the security improvements last year.

WHAT'S A CRITICAL SYSTEM? Some CIOs are using Y2K assessments as a guide. Others are looking at the systems they had to keep running during the federal budget shut-down in 1995-1996.

WHAT'S THE GOAL? Ensure the capability to protect critical infrastructures from attacks by 2003.

HOW ARE THEY DOING IT? Intrusion detection systems, better training and coordination, and vulnerability assessments.

Sun Buys Java Tool Maker

Sets app strategy for NetBeans

BY LEE COPELAND

Sun Microsystems Inc. bought Java tool maker NetBeans Inc. last week and laid out a strategy to unify its application server offerings around iPlanet — a plan that analysts and users said could present challenges

to application developers.

Sun's first move was to put Prague-based NetBeans' entry-level Java tools into the open-source community. NetBeans Developer Pro will serve as Sun's small business application development tool set.

Sun said the new iPlanet offering, expected to ship in March, will contain code from Netscape Application Server, NetDynamics and Java 2 Plat-

form Enterprise Edition. Sun said it would position its SynerJ tools as its high-end enterprise development environment.

Analyst Carl Zetie at Giga Information Group Inc. in Cambridge, Mass., predicted a tumultuous next six months for Sun while it meshes its new application server.

"There is no doubt that this will present big migration problems for existing customers," Zetie said. Users may wonder "which application server and development environment [they] should use today when the strategic server won't be available until March."

Sun said the Netscape Application Server had about 200 and SynerJ had roughly 20. Adam Abrons, a developer at Thoughtworks LLC, a custom development shop in Chicago, said Sun is back on track with its recent acquisition.

"If you write to standards and not a particular application server, we can get around the delay," Abrons said. "The

NetDynamics acquisition [by Sun] was shortsighted, and it seemed as though they weren't all on the same page within the company. But NetBeans seems to be a good development environment, and it gives them a consistent story."

Forté Software Inc. customer Joseph Ruffolo, a software architect at Nu Skin Enterprises Inc., a personal care company in Provo, Utah, expressed concern that Sun may solely focus on Java. "Sun is putting all its eggs in the Java basket, but I want non-Java tools because the performance is considerably better in a compiled vs. an interpreted Java virtual machine language," said Ruffolo.

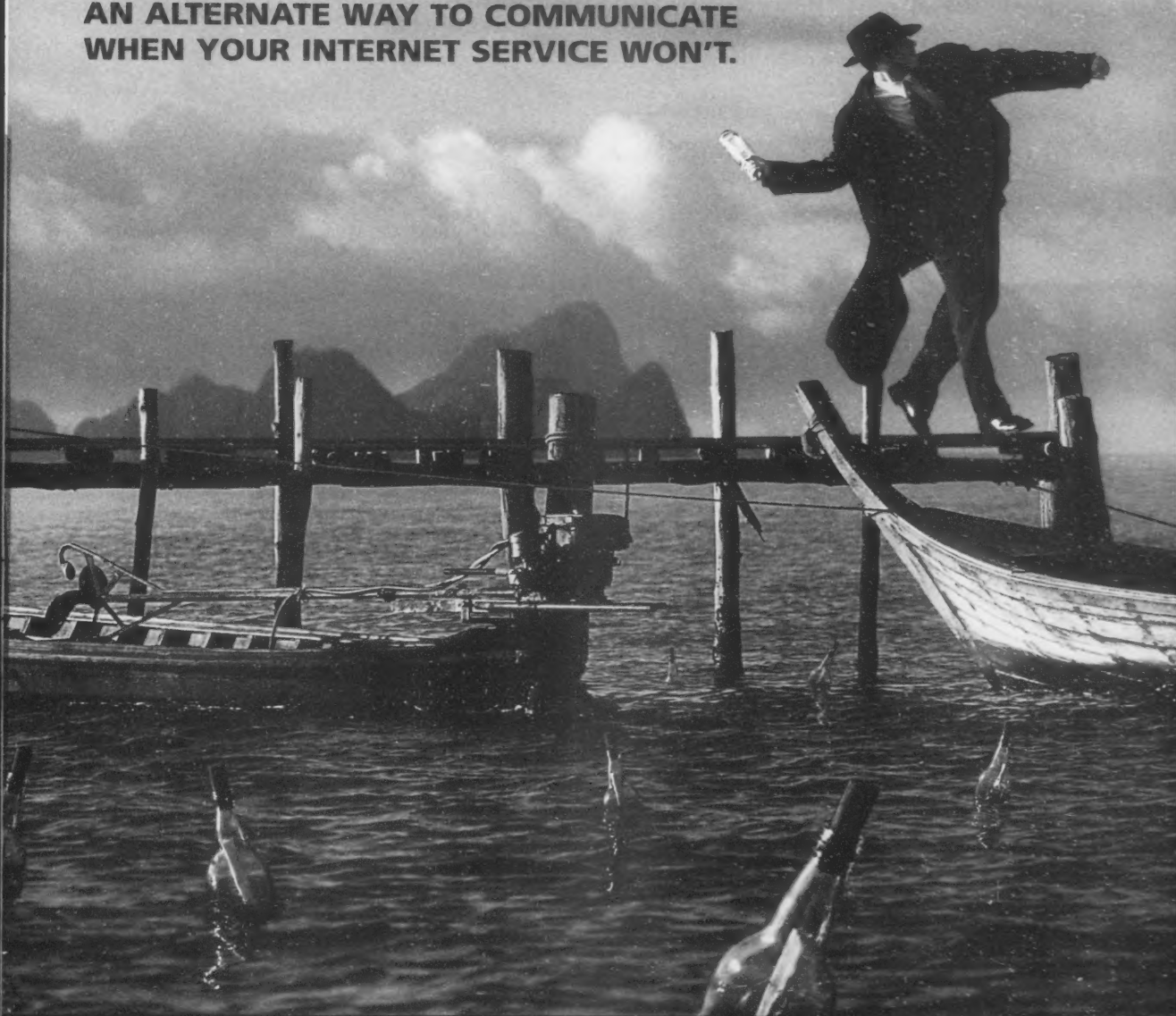
In August, Sun bought Forté Software for \$540 million and gained a development environment that generates C++ code for myriad platforms.

With NetBeans, whose purchase was for an undisclosed amount, Sun gains a Linux development environment. NetBeans will become part of Sun's Software Products and Platforms division. ▀

Before and After

FORMER PRODUCT NAME	NEW NAME	POSITIONING	AVAILABLE
NetBeans	Community Edition	Simple Web projects	Free for download now
NetBeans Developer Pro	Internet Edition	Business applications on single Web server	Q1 2000
SynerJ	Enterprise Edition	Large-scale distributed applications	March 2000

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Continued from page 1

Payroll Systems

tem, resulting in missing or incorrect paychecks and the inability to pay teachers for extra jobs such as coaching sports.

In both cities, the problems are being blamed more on implementation issues than on shortcomings in the payroll applications that are being used — SAP AG's R/3 in Orlando and Fairfax, Va.-based American Management Systems Inc.'s (AMS) Advantage software system in Philadelphia.

School officials in the two cities said faulty data entry and missing data are causing many of the headaches.

"We have no problems getting paychecks to all employees when the information has been properly inputted into the system," said Herb Schechtman, acting finance director for the Philadelphia schools. The AMS software "is working exactly as it should," he said.

But in the rush to get the system up and running in time for the start of school, payroll information and other data for many new teachers either wasn't entered or was plagued by errors, Schechtman added.

Loretta Crea, a senior secretary who tracks payroll data at the city's Edward W. Bok Tech-

Payroll Tips

Companies installing new payroll systems should:

- Avoid rushing the project if possible
- Test to make sure legacy data can be fully converted
- Thoroughly train end users on the new software
- Get end users involved in configuring the software early on
- Run the new and old systems in parallel at first

nical High School, said three days of new system training — which users were called back from summer vacation to attend — weren't very helpful. "Most of our questions were unanswered rather than answered. They told us they just didn't have the answers," Crea said.

Joe Mittiga, a spokesman for the Orlando schools, said not enough testing was done there to ensure that all of the payroll data needed from its 15-year-old mainframe system would get converted over to R/3.

Also, payroll clerks who used to fill out paper time sheets now enter data directly into the SAP system. Mittiga said that has resulted in data-quality problems, due partly to

changes made to the new system after workers were trained.

Corporate users face the same issues when they put in payroll applications, said Lyle Smith, director of global compensation and project manager for a new corporate human resources system at PPG Industries Inc. in Pittsburgh.

"A lot of companies get into trouble when they try to shortcut [things]. They go live before they know if they've worked out all the kinks," said Smith.

PPG is in the final stages of rolling out its new system, which is now handling payroll for 31,000 employees at 38 plants. Smith said the \$7.5 billion maker of glass and other products runs Oracle's software and its old mainframe system in parallel for eight weeks at each plant to make sure nothing goes awry.

It also centralized data entry on hirings, promotions and other personnel changes because of fears that it couldn't get human resources workers in the plants trained in time. "We may send that back out later, but there was just the possibility of too many errors," Smith said.

Big payroll systems are inherently complex, said Jim Holincheck, an analyst at Giga Information Group Inc. in Cambridge, Mass. "And it's so

visible when you screw up," he added. "That's the problem."

In Philadelphia, which has 30,000 school employees, hundreds of teachers and other workers on the job since September have yet to receive their first paycheck, according to Barbara Goodman, a spokeswoman for the Philadelphia Federation of Teachers.

About 1,000 of Orlando's

20,000 employees didn't get paychecks at first, though Mittiga said that was reduced to just one in the latest payroll run.

Robert Salvucci, head of SAP's public sector and education unit, said some changes are being made to R/3 to help fix the problems in Orlando. For example, SAP is creating new reports that are supposed to help catch data-entry errors. ■

Continued from page 1

CIOs

Energy Corp. and Philadelphia-based chemicals maker Elf Atochem North America Inc.

In a panel discussion slated for today at the Society for Information Management Interchange '99 conference in Atlanta, those CIOs will exhort attendees to join their cause in trying to persuade vendors to adopt standards and make technology that's easier to install.

"Getting the general membership at SIM on board with this discussion is key" to making it succeed, said Alan Jones, CIO at AT&T.

Jones, part of a SIM working group on information technology complexity reduction, said the group's aim isn't to target specific vendors for their integration-challenged IT prod-

ucts, but rather to encourage vendors in general to "get all of these disparate pieces of components to work together."

Jones and the other CIOs got together last fall to discuss the challenges that large, multisite user companies face in trying to unite various technologies in their IT infrastructures.

Each company suffered from a common problem: systems integration hassles. IT complexity and the proprietary nature of many commercial products "are inhibiting our abilities to move fast" on deploying IT, said Bruce Anderson, manager of technology planning and application services at Duke Energy in Charlotte, N.C.

At the SIM conference this week, Jones and other members of the working group will issue white papers on six topics, including workflow, inter-company security, distributed application component models and Web-client interfaces. One goal is to see if SIM members are willing to endorse the white papers, which urge IT vendors and systems integrators to adopt certain technical standards, Anderson said.

For example, he said the working group endorsed Secure Socket Layer 3.0 and HTTP as Web client interface standards.

Jones put it simply: "Our goals are to take time out of the development and systems integration cycles and keep our costs down."

Historically, there have been problems in reaching workable interoperability standards. Most previous standards-setting efforts have failed to work, because "the intelligence behind hardware and software is proprietary and vendors don't want to share that information," said Claudia Imhoff, president of Intelligent Solutions, Inc., a Boulder, Colo.-based data management consultant. ■

Continued from page 1

Big Systems

Revenue from IBM's flagship S/390 mainframe fell by 40%, and revenue from its popular AS/400 midrange systems plummeted by 30%, contributing to an overall decline of 1% in IBM's hardware revenue of \$8.8 billion from the same quarter last year.

IBM's S/390 sales decline was double what Milunovich had predicted for the quarter. It was also greater than the 30% decline from last year projected by David Floyer, an analyst at mainframe consultancy Impact IT in San Francisco.

Overall for the quarter ended Sept. 30, IBM had profits of \$1.8 billion on revenue of \$21.1 billion. Those figures were up 1.3% and 5%, respectively, from the same period last year.

Freezes weren't the only

Y2K-related reason that large-system customers didn't buy as many systems as expected. Some companies are still absorbing the extra capacity they purchased for Y2K testing, said IBM Chief Financial Officer Douglas Maine.

Locking Down

Do you plan to institute a "lockdown" prior to Jan. 1?



* No system enhancements, upgrades, downgrades, new software or hardware installations.
Base: Survey of 95 companies with an average IT budget of \$38.2M and average IT staff of 816

The critical nature of applications that run on mainframes and on specialized servers like the AS/400 had always made it unlikely that users would want to tinker with hardware upgrades in the fourth quarter, said Joseph Ferlazzo, an analyst at Technology Business Research Inc. in Hampton, N.H.

"The idea of doing any radical changes to our mainframe systems in mid-December just seemed plain stupid this year," said Dan Kaberon, parallel systems manager at Hewitt Associates Inc., a benefits outsourcing in Lincolnshire, Ill.

Hewitt completed installing four of IBM's new Generation 6 mainframes in the past month and figures it has enough capacity to carry it through the year. Now it has a system freeze in place until mid-January during which "all we will do is fix any functional problems as they arise," Kaberon said.

Many companies, such as Sears, Roebuck and Co. and Merrill Lynch, enacted similar year 2000 "lockdowns" that began on or around Oct. 1. "We've put a deep freeze" on deploying any new applications from Oct. 1 until early January, said Douglas W. Paige, vice president of the information technology division at American Re Corp. in Princeton, N.J. But like other companies, American Re isn't putting the brakes on developing new systems, only on rolling them out, noted Paige.

"CIOs are just being very reluctant about doing any modifications" to their mainframe environments for the moment, Floyer said. "This does not mean the death knell of the S/390."

Meanwhile, Y2K factors were also to blame for lower earnings at makers of corporate software packages, including SAP AG (see story, page 29). ■

Internet auctioneer takes bids for marijuana

Online buyers to triple this year

Hostess launches new line of cupcakes

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What is Windows NT Advantage?

Windows NT Advantage is the partnership among Microsoft, Compaq and Computerworld Enterprise Business Solutions to inform IT leaders about Windows NT technology by providing timely, useful information — in print and online — for planning and deploying Windows NT and Windows 2000 on Compaq hardware using Compaq services and solutions.

Online This Week

Selling TCO to the CEO

By now, you're probably well aware of the technical benefits Windows NT 4.0 Workstation and Server bring to your IT environment. But how do you sell those benefits to the CEO of your company in his or her language? We examine some of the technical reasons behind Windows NT 4.0's popularity and explore the business justifications you can take to your CEO.

Planning a PC Path to Success

You'll probably migrate to Windows 2000 and NT soon, and those old boxes that were adequate for Windows 9x and last year's software just won't have the muscle to swing the new hammer. Compaq can help you decide which upgrade path is right for you with an in-depth planning program, part of its PC Lifecycle Solutions service.

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Quickpoll Does Windows NT scale properly to satisfy the majority of your application requirements?

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Check out last month's results: Will you be seriously investigating a Windows 2000 implementation within the next 24 months?
Sample size = 1,002 people



Windows NT

Managing portables in the enterprise

Compaq, Microsoft are addressing challenges of mobile laptop management

By Elisabeth Putnam

When GTE Internetworking salespeople arrive for a quarterly meeting, they hand their Armada laptops over to IT technicians. At the end of the meeting, they get their laptops back, thoroughly checked out and serviced. "It's like a car wash service," says Herb Philpott, senior program manager at the GTE Corp. subsidiary's IT group. Mobile laptops require ongoing support, but support is difficult when the user is miles from the corporate help desk.

These road warriors, which Gartner Group defines as users who spend at least 80% of their work time traveling, raise a number of unique challenges.

According to Stacy Blum, product manager in portable solutions marketing at Compaq, a user traveling around Europe and staying in a different hotel each night might log on to the corporate server once a day to pick up e-mail over low-speed, often unreliable dial-up connections. Hardly the ideal setup for performing extensive diagnostics or downloading a bulky software update.

Furthermore, mobile laptops are vulnerable to security hazards, Blum points out. "You can be on a plane and someone looks over your shoulder and reads confidential information." Or someone steals your laptop, and all its data, out of your hotel room.

No wonder the annual cost of administration and support of mobile laptops can be more than 50% higher than that for LAN-connected desktops, according to Gartner Group.

Helping to ease the management of mobile computers, Compaq and Microsoft support standards such as Desktop Management Interface and the Web-Based Enterprise Management specification. These standards enable access to management information from managed clients in a standardized fashion. For example, Compaq recently extended



its support of these standards across its product lines, including its Armada laptops.

In another effort, Compaq is providing management capabilities locally on the laptops themselves. An example is Compaq's Self Monitoring Analysis and Reporting Technology hard drive, which can do self-diagnostics and alert the user of problems.

Over the past year, Compaq has announced a slew of mobile laptop manageability offerings through its Intelligent Manageability initiative, an umbrella program that encompasses the vendor's entire desktop and laptop management offerings to address the special needs of the mobile user. ■

To see the full text of this story, visit www.WindowsNT-Advantage.com.

Microsoft

COMPAQ

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Advantage

The Web Magazine for
IT Leaders Implementing
Windows NT on Compaq Platforms

The Future of NT: A Q&A with Jim Ewel

Support is assured for
customers staying with NT

Jim Ewel, director of marketing in the Business and Enterprise Division at Microsoft Corp., recently spoke with Windows NT Advantage about the future of NT.

NTA: How long will Microsoft continue to support Windows NT?

Ewel: It depends on customer demand. We will continue to support it after customer demand is over, and we will continue to support it for two years after that.

NTA: Can you assure current Windows NT users that they will continue to get support?

Ewel: We don't have plans to stop selling Windows NT. For example, today you can still get support for Windows 3.1 and Windows for Workgroups.

NTA: Would a user planning to migrate to NT 4.0 early in 2000 be better off waiting for the pending release of Windows 2000?

Ewel: Each customer has to look at what's best for them. If they are bringing in new machines right now, they should get the machines with Windows NT and then upgrade to Windows 2000 when we release it.

NTA: How much money can a single user save by staying with Windows NT?

Ewel: Customers will lose money if they stay with Windows NT. They will also miss out on the new features of Windows 2000, such as the benefits of plug-and-play, USB and the security infrastructure.

[Consulting firm] Arthur Andersen estimates that a major oil company plans to save about 75% in deployment costs by



Ewel's advice?
Users can
save money
with a
consistent
environment.

moving to one environment. Currently, the company is running Windows 95 and NT 4. When the oil company moves to Windows 2000 it will have standardized on one environment.

Users can save money with a consistent environment. For example, if you have Windows NT on your desktops and Windows 95 on your laptop, that isn't as efficient as having one environment. You save money with one environment.

NTA: How can users best prepare their current Windows NT environment for the upgrade to Windows 2000?

Ewel: There are two general rules to follow. One, make sure you are buying Windows 2000-ready PCs. The other rule is to start playing with the Windows 2000 Release Candidate 2.

NTA: How can someone get Windows 2000 Release Candidate 2?

Ewel: Any of our customers can get it by ordering it from our Web site at www.microsoft.com/windows/preview/default.asp.

To see the full text of this interview, visit www.WindowsNT-Advantage.com.

Point of View

Compaq's services unit
offers experience to customers

Franco Gentili, a director in Compaq's Professional Services division, is making sure Compaq remains the leading provider of enterprise Windows NT and Windows 2000 infrastructures by implementing an array of programs.

"We want to demonstrate that nobody else has the experience we have," Gentili declares. "When Windows 2000 comes to market, we will be ready to provide the skills and experience customers need to implement it."

He emphasizes that Windows 2000 is more than an upgrade from Windows NT, and as such, it requires time and money to implement.

To approach Windows 2000 migration issues, Compaq has implemented a "Windows 2000 Solution Set." This program includes many key elements.

The onTrack component is made up of an overview of Windows 2000 migration requirements. This involves having Compaq experts talking to NT users about the need to plan ahead for incorporating their existing software into Windows 2000.

During the planning and design component,

Compaq experts help customers to design new infrastructures and the domains within them.

Compaq Windows 2000 Academies

Compaq is conducting two Windows 2000 academies, tutored by the Windows 2000 "dream team." The four-day academies are being held for U.S. companies in San Diego Nov. 1-4, and for European companies in Cannes, France, the week of Nov. 22.

"This training is a big investment for us, but it is very vital if we are to demonstrate that we are the leading Windows 2000 experts," Gentili explains.

Working with Microsoft ISVs

Because Compaq has such a close relationship with Microsoft, it is working with the company on the creation of a Windows 2000 ISV program.

Gentili sums up the closeness of Compaq and Microsoft by saying, "If Compaq and Microsoft work together, and help customers make the Windows 2000 journey, I think it's going to be a win-win situation for the customers, Microsoft and Compaq." ■

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Windows NT information, go to
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Pilot Licensing Model Supported

Subscription-based Exchange a first for Microsoft, a potential boon for users

BY DOMINIQUE DECKMYN
AND DAVID ORENSTEIN

MICROSOFT Corp. has quietly started to pilot a subscription-based licensing model for Exchange. According to analysts, this rental model might attract application service providers as well as corporations that want more licensing flexibility. Microsoft confirmed that it has started the pilot but declined to comment further.

Bruce Bartolf, vice president of information systems at the 1,850-employee architecture firm Gensler Inc. in San Francisco, said a rental license for e-mail applications would give him important flexibility.

Paying a monthly rental fee

for applications rather than a lump sum for a multiyear deal would allow Gensler to tailor what it pays for information technology more closely to the variations in its cash flow, Bartolf said.

"It's imperative that Microsoft change its pricing model as they move into the [application service provider] space," said Jonathan Penn, an analyst at Giga Information Group Inc. in Santa Clara, Calif.

Subscription-based licensing might make Exchange more alluring to application service providers, said Steve Robins, a senior analyst at The Yankee Group in Boston. Application service providers "don't have revenue until they sell a mailbox," said Robins, so

subscription-based licensing would mean they don't have to pay up front.

One of the vendors participating in the pilot is application service provider USInternetworking Inc. (USI) in Annapolis, Md., which last month started offering Exchange for prices starting at approximately \$25 per mailbox per month.

"Enterprise customers will be asking to be priced on a monthly basis," said Nick Magliato, president and general manager of USI's enterprise messaging business unit. "To the extent that [suppliers] help us with this requirement, we'll be able to service the market better."

Bartolf said the application service provider model would work well for Gensler's e-mail needs. "E-mail is like electricity," because a company needs it but doesn't want to be responsible for the overhead of providing it, he said. ■

Microsoft Pursues Puzzling Two-Pronged Workflow Tool Strategy

Microsoft last week made a late entry into the workflow market. But its two-pronged strategy is perplexing analysts.

Microsoft launched Access Workflow Designer for SQL Server, previously code-named Grizzly. The tool is free to licensed users of Microsoft Office 2000 Developer Edition. It will allow developers to visually design workflows on top of SQL Server and will offer support for disconnected users.

But at the Microsoft Exchange Conference in Atlanta earlier this month, the company demonstrated a different workflow tool that builds on Microsoft Exchange. This second tool may ship as a component of Exchange 2000 or may be sold separately as an add-on to Exchange.

Richard Medina, a senior analyst at Chicago-based research firm DocuLabs Inc., said the release of two Microsoft workflow components is "a cause for concern" for developers because it suggests that neither of them provides a general solution for all workflow needs. "And if they're not differentiated enough, one of

them could die," said Medina.

Grizzly was originally positioned as Microsoft's key workflow product. But, according to Neil Charney, group product manager for developer tools at Microsoft, the company is seeing greater interest from customers in workflow based on Exchange.

Charney said both workflow tools will use the same graphical interface, making it easier for developers who start work with Grizzly to later design workflows for Exchange 2000. But to create a workflow that includes both database and messaging components, developers will have to use both tools separately, Charney said.

Analysts said they're confused by Microsoft's approach.

Nathaniel Palmer, an analyst at The Delphi Group in Boston, said he believes this same confusion also reigns inside Microsoft, which has been "chasing its tail" trying to catch up with Lotus Development Corp. Lotus recently launched Domino Workflow 2.0, based on technology it acquired earlier this year.

- Dominique Deckmyn

Microsoft Casts Wide Net To Sell, Service Win 2000

Will reach biggest customers with on-site staff

As a vice president in Microsoft Corp.'s business and enterprise division, Deborah Willingham is responsible for persuading millions of customers to adopt the far-reaching and complex Windows 2000 operating system.

In an interview with Computerworld senior writer David Orenstein last week, Willingham said Microsoft, which in March reorganized into business units focused on different kinds of customers, will reach out to the largest Windows 2000 customers with consulting services and offer other users information about third-party consultants, seminars and educational Web sites.

Q: What role will Microsoft consulting play for customers rolling out Windows 2000?

A: Microsoft Consulting Services can certainly play a role in helping larger enterprises plan and architect their Windows 2000 deployments. In addition, we have over 5,000 solution providers who we have been very busy training on this product and giving technical information so that the options for customers are quite broad.

Q: Customers say they want to see on-site, around-the-clock availability from Microsoft like they've historically seen from IBM or Hewlett-Packard Co.

A: Certainly we offer those services — around-the-clock [and] on-site. For customers who love HP support and IBM support, both of those companies as well offer services around Microsoft's platform.

Q: Microsoft President Steve Ballmer said you have 350 customers with Microsoft consultants in that kind of situation. Can you accommodate more?

A: The focus of our consulting services is on the very largest, most complex accounts. We believe we have the resources available to cover those large enterprise organizations who tend to put together a large services team to approach a large deployment project. ... We also have the many solution provider organizations that we work quite closely with.

Q: What is Microsoft doing to make Windows 2000 migration work and costs as painless as possible?

A: Let me just talk about three particular tools. The first is SysPrep. That allows people to prepare a system exactly how the administrator wants it set up with the operating system, with the applications, with the settings. They can duplicate it

using third-party duplication software. It allows them to blow that out to all their desktops. It allows them to get unique security IDs and user names that happen on first boot.

There's a setup manager wizard so an administrator can set up an installation script with specific settings and then the setup program can run unattended on the user desktop.



DEBORAH WILLINGHAM: Microsoft is beefing up availability

Remote Install Services [allows] for the storage of images or setup files or scripts. Those can be used by any machine that's plugged in to the network to install Windows 2000 on the desktop.

Q: What kind of resources are allocated to Microsoft's customer focus?

A: The most important thing for us is to address those top customer issues that IT has with our platform: things like reliability and availability,

thinking about helping them deploy very secure infrastructures, helping them learn how to reduce costs.

We have a key relationship tool today that helps get us access to a number of these people. It's called TechNet. We touch over a million customers a year around the world in TechNet seminars. We also have the TechNet Web site.

Q: What are the new signs of a customer focus on a pragmatic level?

A: The thing that is new is increased investment both in increasing the number of those seminars and increasing the number of people inside Microsoft who are working on those programs and information products.

The other thing that will be most pragmatically visible to customers will be a change in how you see Microsoft do things as simple as advertising. In the past, advertising was done product by product. What you'll see going forward is more of an integrated messaging and advertising. ■



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CA, IBM Proffer Price Breaks for OS/390

Companies seek to retain mainframe users, position machine as e-commerce server

BY SAMI LAIS
NEW YORK

COMPUTER Associates International Inc. and IBM last week announced a unified front in pricing, software-package development and support for the IBM OS/390 platform meant to appeal to mainframe users who are developing e-commerce applications.

The two companies are betting "OS/390 will become the e-business server of choice," said David Carlucci, general manager of the OS/390 division at IBM.

The pricing alignment for IBM's Multiprise 3000 Server will deeply cut costs for CA software, said Charles B. Wang, chairman and CEO of Islandia, N.Y.-based CA.

Educational Credit Corp. in St. Paul, Minn., has been outsourcing its data management but wants to resume internal operations. The student-loan guarantor will take delivery on one of IBM's new Multiprise machines at year's end. Mike Coleson, application manager at the company, said he has run the numbers, and the price CA is quoting for a Unicenter TNG and application package

for OS/390 is "about half what I would have paid for the same package a month ago."

CA is offering another price break to companies migrating from the VSE to the OS/390 operating systems. During the transition — for up to three years — companies pay none of CA's VSE software licensing fees, said a CA spokesman.

"It's a bold approach," said Charlie Burns, an analyst at Giga Information Group Inc. in

Houston. While mainframe hardware prices have dropped, software prices haven't. "People try to upgrade, and they save on the hardware, then get hit with millions of dollars of upgrade costs on the software," he said. The new e-business applications will further buttress a company's decision to stay with its mainframe environment, Burns said.

A typical mainframe operation looking at implementing e-commerce must choose to connect existing applications to the Web or go to a new platform and re-create and reinvent as much as 30-years' worth of

business applications, he said.

IBM is taking a businesslike, hardware vendor's approach in striking an alliance with a direct competitor of its Tivoli Systems Inc. unit in Austin, Texas.

"There isn't a direct one-to-one relationship between" the software the companies offer, Carlucci said. "And many customers have already chosen their software."

Tivoli is also aggressively pursuing OS/390 users looking to e-commerce, issuing its own OS/390 management software and conducting a series of electronic-business management seminars, beginning last week in Boston.

Coleson said Tivoli representatives have called him to talk about their OS/390 tools. His company hasn't decided which management software it will use, but Tivoli's price is still higher, he said. ▀

Net to Boost Free Food Distribution

BY JAIKUMAR VIJAYAN

A new online service supported by a slew of information technology vendors, food manufacturers and transportation companies promises to improve the nonprofit distribution of surplus food and supplies to charitable organizations.

ResourceLink, an Internet-based electronic service, was launched last week. The effort is being led by Hewlett-Packard Co. and America's Second Harvest, a domestic hunger-relief organization. Last year, America's Second Harvest's 189 regional food banks distributed more than 1 billion pounds of donated food from companies like General Mills Inc., Kellogg Co., Kraft Foods Inc., Nabisco Inc. and Tyson Foods Inc.

"ResourceLink is a portal that will link thousands of donor companies with certified charitable organizations" and the transportation services required to deliver the food, said Deborah Leff, president and CEO of America's Second Harvest.

Streamlined

It's a major improvement from a system that previously involved telephoning and faxing donor companies, finding out what they had to offer, matching them with food bank requirements and then trying to find transportation services to deliver the supplies, Leff said.

Making it possible is Woodland Hills, Calif.-based Cyber Surplus Inc.'s "match-and-alert" technology, which connects donors and charitable organizations over the Internet. The Cyber Surplus exchange is linked to Downers Grove, Ill.-based National Transportation Exchange Inc. (NTE), an online logistics portal site representing more than 350 transportation companies.

Requests for food transportation services are routed through the NTE, which tries to find agencies with surplus or idle capacity, said Debra Reabock, vice president of business development at the NTE. ▀

Hands-on Executives Flee for Web Start-ups

IPO fever not the only driving force

BY JULEKHA DASH

The ranks of high-level business and IT executives who depart Fortune 500 companies for dot.com start-ups continues to grow more quickly than you can say "stock options."

But while most observers point to initial public offering fever as the root cause, some of these defectors are leaving for a less obvious reason — the chance to play a more hands-on role in a company's information technology strategy.

Take Mohan Gyani, who two weeks ago became president and chief financial officer of San Francisco-based PeoplePC Inc., which offers PCs, Internet access and in-home service for a monthly fee. As the former head of strategy and development at cellular communications provider Vodaphone Air-Touch PLC, Gyani certainly has made his share of high-level IT-related decisions.

But at a smaller start-up, Gyani can play a more hands-on role with regard to technology decisions, such as deciding how to configure the computers the company will make available to customers or nego-

tiating with suppliers to get the best price. "There's not three layers of people executing these decisions," said Gyani, who likens both past and present jobs to being an "orchestra leader." But in a start-up, you also get to "play several instruments."

Gyani also wanted to be a leader in making Internet access available to many first-time users. Although Gyani could have gotten involved with the Internet by joining the electronic-business division of a large company such as Vodaphone, such divisions are "always going to be a piece of the total pie," rather than the company's driving force, which is the case in an Internet start-up.

Jim Sherriff, who became CEO of Dallas-based consultant Stonebridge Technologies Inc. earlier this year, expresses similar thoughts about his decision to leave his job as vice president and general manager at Hewlett-Packard Co.'s worldwide consulting division to head a smaller firm. Sherriff said he enjoys being able to meet more frequently with clients, who are located mainly in the Southeast, rather than

throughout the world, which was the case at HP.

Other recent executive moves include the following: Jay Perlman, the No. 2 man in the Securities and Exchange Commission's Internet enforcement division, left Oct. 13 to become associate general counsel at online financial adviser The Motley Fool. At the end of September, Andersen Consulting CEO George Shaheen, left to become CEO of Webvan Group Inc., a San Francisco-area Web grocer, and Michael J. Jackson, formerly president and CEO of Mercedes-Benz USA Inc., became CEO of online automobile seller AutoNation Inc.

Terry Gallagher, president of executive search firm Battalia Winston International Inc. in Edison, N.J., said these experiences are typical for senior executives at big companies, for whom the "adrenaline rush peters out" as their jobs become laden with bureaucratic processes. Besides revamping their equity offerings, large companies need to create opportunities such as launching new business ventures, said Gallagher. ▀



MOHAN GYANI sought a hands-on role in IT

Here's the Deal

CA and IBM OS/390 pricing guidelines:

Situation: User migrates from VSE to OS/390.

CA's deal: During the migration — for up to 36 months — user pays CA licensing fees only for OS/390 applications, and no fees are due on VSE applications. User must sign a five-year licensing pact.

Situation: User buys an IBM Multiprise 3000 running OS/390.

CA's deal: Perpetual license with 600 MIPS cap for figuring maintenance fees available; maintenance service is about one-third of standard rate.

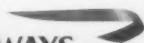
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Furniture Makers, Retailers Team Up Through Web Venture

BY JULIA KING

While manufacturers and retailers in other industries duke it out to win their fair share of

cybershoppers, HomePoint Corp. is getting players in the \$75 billion home furnishings market to play nicely together

in the snake pit of online sales.

Since January, the Greenville, S.C., start-up has gotten more than 200 furniture makers

and dealers to buy in to its

Web-based supply-chain strategy. Under this model, manufacturers, retailers and Home-

Point all earn a profit from online sales executed via HomePoint's Advantage Network.

"We realized from the start that you can't be a virtual company in the home furnishings business and be successful. You have to be able to deliver the product, handle returns and have a place for customer service," said HomePoint CEO Mike West.

To accomplish that, HomePoint recruited established furniture retailers. By ordering through HomePoint, the retailers gain access to a greater range of products than they would through a traditional regional distributor. And manufacturers gain a fatter potential customer

base because, unlike many traditional distributors, HomePoint lists multiple products from competing manufacturers.

HomePoint links partners over an extranet using technology from Interworld

Corp. in New York. It's also installing electronic catalog kiosks in retailers' stores, so shoppers can browse through what manufacturers have to offer.

"Now, customers who go to a store and don't find what they want go to another store," West said. "This way, they can go online [at the kiosk], plus the dealer can check the status of inventory and place the order immediately."

To encourage stores to install the electronic catalogs, HomePoint will offer free Internet access, CIO Barbara Jessen-White said. That was enough to sell the idea to Marty Bass, president of Bass Wholesale Furniture LLC, who recently expanded his Knoxville, Tenn.-based mattress business to include home furnishings.

"This is going to help me get off the launching pad," Bass said. "With HomePoint's customer base, I'll be able to immediately have customers that I wouldn't have."

Another benefit for retailers is access to better customer information, said John Jordan, an e-commerce analyst at Ernst & Young's Center for Innovation in Cambridge, Mass. ■

Online success

is never a guarantee, especially if you're trying to do all the heavy lifting yourself. How can you make your business an online powerhouse? How can you deploy applications quickly so you can focus on your core business? Simple. Pick an expert application service provider. One who delivers everything from high-availability Web hosting to complete Internet applications hosting, management and rentals. A company designed

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MIKE WEST, HomePoint CEO: Furniture market needs brick-and-mortar stores

Q3: Let the Good Times Roll (Mostly)

Double- and triple-digit profit growth dominates reports — except in ERP space

COMPANIES throughout the industry released their financial results for the most recent quarter last week, and the overall news — with one big but not surprising exception — was quite good.

Vendor revenue and profits on such disparate products as databases, big hardware and network and systems management software all were up. "Where a company missed numbers, they did so because of specific execution problems ... not because of earthquakes in Taiwan, [dynamic] RAM shortages or Y2K," said analyst David Wu at ABN AMRO Inc. in San Francisco.

The widely anticipated year 2000-related slowdown has so far failed to impact most companies, with the exception of enterprise resource planning (ERP) vendors like SAP AG,

Wu said. "ERP vendors were the obvious casualties ... and as expected, they got killed." IBM also attributed lower-than-expected earnings to Y2K (see related story on Page One). Here's a sampling of some results reported for the quarter ended Sept. 30:

Computer Associates

Computer Associates International Inc.'s announcement last week of \$1.6 billion quarterly revenue was within expectations, said Paul Dravis, an analyst who follows Islandia, N.Y.-based CA at Charlotte, N.C.-based Bank of America Corp.

The 32% jump over revenue in last year's third quarter was derived partly from "synergies" from the Platinum Technology Inc. systems and database management tools CA acquired in June and partly, as CA Chairman and CEO

Charles B. Wang claimed, from sales related to electronic business, Dravis said.

Enterprise Resource Planning

For several of the top ERP vendors, the financial news remains bad.

Market leader SAP AG reported a 64% drop in profits from the same period last year to \$48.6 million, as sales of its software dipped 2% and total revenue grew a paltry 7% to \$1.21 billion.

PeopleSoft Inc. in Pleasanton, Calif., said its third-quarter profits plummeted 88% from a year earlier to \$5.2 million. Software sales dropped 67% to \$48.8 million and accounted for less than one-fifth of PeopleSoft's revenue total of \$303.1 million.

And Baan Co. reported its fifth straight quarterly loss. The Netherlands-based vendor said it lost \$25 million in the third quarter as revenue dropped 27% to \$143 million.

As a group, ERP vendors have been like "cars coming down a highway and all sort of running into a brick wall at the same time," said George Gilbert, a financial analyst at Credit Suisse First Boston Corp.'s San Francisco office.

First, the window for fixing year 2000 problems by installing ERP applications closed earlier this year, Gilbert said. Now, SAP and its rivals

are struggling to move beyond their back-office roots and develop Web-enabled software that supports emerging applications such as e-commerce and customer relationship management, he added.

Business Intelligence

In the business intelligence sector — which comprises companies that make tools to analyze data to support busi-

ness decisions — most vendors posted double-digit earnings increases. That's because the technology is becoming increasingly popular, according to analysts.

"The net is, there's a lot of business out there," said Howard Dresner, an analyst at Stamford, Conn.-based Gartner Group Inc. Washington-based Micro-

Strategy Inc. reported revenue of \$54.6 million for the quarter, up 102% from the same period

last year, and net income of \$3.8 million, up 97%.

Sunnyvale, Calif.-based Hyperion Solutions Corp. said that its revenue was up 2% to \$107.25 million for the quarter, and profits were \$6 million.

Palo Alto, Calif.-based Brio Technology Inc. reported quarterly revenue of \$30.7 million, up 53%. Net income was \$2.8 million.

But with success can come

Earnings Results Released Last Week

COMPANY	REVENUE GAIN/ DECLINE*	NET INCOME GAIN/ DECLINE*
America Online	+ 47%	+ 268%
Baan	- 27%	**
Brio	+ 53%	+ 623%
Business Objects	+ 45%	+ 156%
Computer Associates	+ 32%	+ 13.6%
IBM	+ 5%	+ 20%
Informix	+ 17%	+ 30%
Microsoft	+ 28%	+ 34%
PeopleSoft	- 14%	- 88%
SAP	+ 7%	- 64%
Sybase	+ 2.8%	+ 627%

* As compared with same period last year ** Baan had net loss of \$25M, up from a \$40M loss

ness decisions — most vendors posted double-digit earnings increases. That's because the technology is becoming increasingly popular, according to analysts.

"The net is, there's a lot of business out there," said Howard Dresner, an analyst at Stamford, Conn.-based Gartner Group Inc. Washington-based Micro-

Strategy Inc. reported revenue of \$54.6 million for the quarter, up 102% from the same period

the inclination to go on a buying spree, which isn't always the wisest move, Dresner said. Instead, Dresner noted, these companies need to focus on the near-term opportunities and on building world-class field organizations. ▀

Computerworld reporters Jaikumar Vijayan, Sami Lais, Craig Stedman and Robin Robinson contributed to this report.

Microsoft Shows Q4 Optimism

Microsoft Corp. President Steve Ballmer last month warned anyone who would listen that technology stocks, including Microsoft, couldn't support their valuations. Yet last Monday, the vendor beat analysts' earnings expectations by 6 cents per share, or 17%.

Microsoft also showed a new optimism about the coming quarter, a change from its prior stance that year 2000 lockdowns could hurt sales.

Ballmer contributed to a Nasdaq Stock Market slide on Sept. 23 when he said the prices of technology stocks were "absurd." That day, investors discounted his company's stock by 5%.

Less than a month later, Ballmer's pessimism was blown away by Microsoft's 37% increase in earnings, to \$2.19 billion for the three-month period ended Sept. 30, compared with the same period a year ago. Revenue leapt to \$5.38 billion from \$4.19 billion during the same period last year.

In an announcement, Microsoft Chief Financial Officer Greg Maffei attributed the increases to strong sales of Office 2000 and Windows NT 4.0. The company made a point of mentioning that year 2000 concerns didn't appear to lessen corporate demand for software.

Some big Microsoft customers have stopped buying new products while they fix Y2K problems, but "it's not as large a problem as we feared it might be," Maffei said in a conference call with reporters and Wall Street analysts last week.

The attitude switch makes sense because this close to the end of the year, Microsoft has a better handle on what customers plan to do, said Paul Dravis, an analyst at Bank of America Securities in San Francisco. "This is the first time in a while where Microsoft was upbeat," Dravis said. — David Orenstein and Kim S. Nash with contributions from Jack McCarthy of the IDG News Service

Nortel Buys Clarify for \$2.1B

BY JAMES COPE

Nortel Networks' acquisition last week of customer relationship management (CRM) software provider Clarify Inc. will lower the cost and speed up implementation of call and customer service centers for businesses, one analyst said.

In a stock-only deal, Nortel will pay an estimated \$2.1 billion to buy Clarify. The companies anticipate completing the deal in the first quarter of 2000.

Clarify will operate as an independent subsidiary of Nor-

tel, and will continue to advance its primary CRM application suite, eFrontOffice. The application integrates customer interaction, be it via e-mail or phone or face-to-face.

The hookup of the global Nortel and San Jose-based Clarify goes far toward resolving the challenge of building a full-service call center, which requires separate vendors for e-mail, chat and CRM, as well as for the telephone switches and computer telephone integration (CTI), said analyst Erin

Kinikin at Giga Information Group Inc. in Santa Clara, Calif.

"Nortel brings telephone switches and CTI and also has wireless, which is important for supporting service and sales," Kinikin said.

Dave Handley, manager of support systems at Rockwell Automation in Cleveland, sees the acquisition of Clarify as a benefit to users. His organization has used Clarify products for more than three years.

Kinikin predicts that integrated and fast deployment of call centers that include CRM will become increasingly important in a wide variety of companies. ▀

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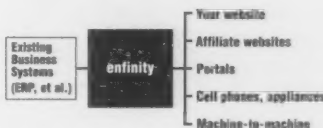




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MARK HALL

Put users on alert

CHARLES SCHWAB & CO. appends an ominous-sounding revelation to all of its employees' outgoing e-mails: "WARNING: All e-mail sent to or from this address will be received by the Charles Schwab corporate e-mail system and is subject to archival and review by someone

other than the recipient." Schwab isn't the only company that sends these notices. Such warnings are increasingly common as companies grapple with different ways to, in effect, manage individual employee behavior.

Last week *Computerworld* released the results of a study that showed 31% of corporate e-mail managers already monitor e-mail [Page One, Oct. 18]. Before next year ends, our poll learned, nearly half of U.S. corporations will be doing so. Not all of these organizations will acknowledge in each outgoing message the legitimate snooping into their staff's e-mail. Some simply tell their employees in a policy statement that such prying is going on but don't let outsiders know their messages are being reviewed, too.

Schwab's approach reminds employees and cautions everyone else that the company doesn't think of e-mail as a perk. Such a message casts e-mail software as a business tool that Schwab owns. The warning also under-



MARK HALL is *Computerworld's* West Coast bureau chief. You can contact him at mark.hall@computerworld.com.

scores the company's intention to protect its employees from harassment and its customers from improper transmission of their data.

This kind of policy tells me to be on my guard. It doesn't ask my permission to be Big Brother. It assumes the right. And, strangely enough, I like it. It puts the burden on me to be a good citizen, like a red traffic signal that tells me to behave properly as I approach an

intersection. It doesn't make me stop, but odds are I will because I know it's there.

IT managers should not be timid in following Schwab's and others' approach. It will help cut e-mail abuse.

Of course, I have run lights before, just as I may choose to send that funny joke about Bill Gates, Scott McNealy and the goat to my friends at Schwab. But at least I will know I have violated a well-understood rule. I get to act the way I want, rightly or wrongly. Sometimes the best way to get people to do the right thing is to tell them — not ask them. ■

DAVID MOSCHELLA

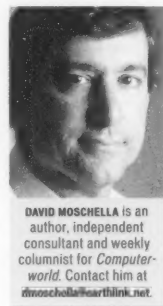
Dear Uncle Sam: Don't let MCI and Sprint merge

ARE YOU INCREASINGLY feeling put off, or even disgusted, by today's huge corporate mergers? If so, you're surely not alone. Too often, these megadeals remind us of the single worst feature of modern American-style capitalism — grotesque levels of executive compensation taken at the direct expense of the typical employee. I've certainly had my fill of puffed-up CEOs basking in the media limelight while knowingly lining their pockets. Then there are the outrageous commissions raked in by Wall Street financiers for only a few weeks of their not-so-difficult work. All of which just sets the stage for the inevitable worker layoffs.

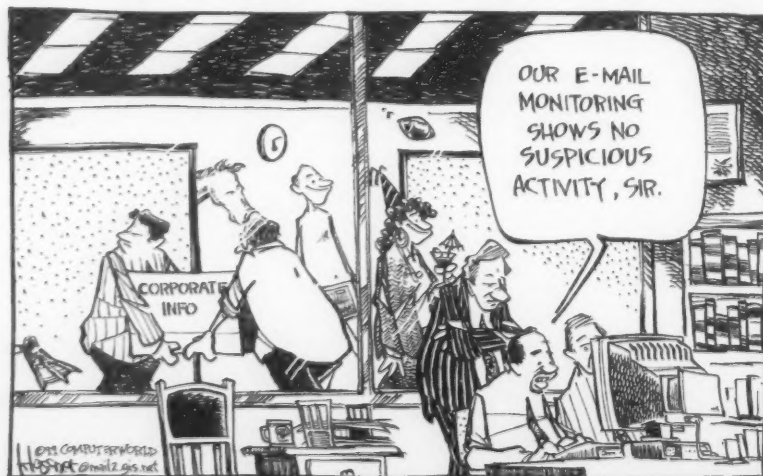
Our general sense that something seems wrong is further aggravated by the fact that we know that most of these deals won't come anywhere close to living up to their much-ballyhooed synergy. There is a century of evidence that proves that large acquisitions are inherently risky propositions that fail as often as not. Indeed, IT people know as well as anyone how difficult it is to merge the systems and cultures of two big organizations — just look at Compaq/Digital or Raytheon/Hughes Electronics.

And yet, as unseemly as many of these mergers appear, there is usually little that anyone can do about them without dramatically altering, and perhaps even ruining, the U.S. business climate. However, there are cases where the evidence of anticonsumer impact is so strong that the government must do something if it is to maintain any credibility as an economic overseer of last resort. MCI WorldCom's proposed acquisition of Sprint is one of those cases.

In the long run, it's all but certain that there will be serious new long-distance telephone competition — be it from the regional Bell operating companies (RBOC), satellite/wireless carriers or today's Internet service providers. But right now, there are just three main players — AT&T, MCI and Sprint. Common sense, and most economic history, tells us that having three competitors is



DAVID MOSCHELLA is an author, independent consultant and weekly columnist for *Computerworld*. Contact him at dmoschella@earthlink.net.



much better for consumers than having merely two.

The case for intervention is strengthened by the availability of an obvious solution. The FCC should simply declare that this deal must be postponed until additional long-distance competition actually emerges. Such a decision would be fully consistent with the FCC's existing and wise restrictions designed to keep the RBOCs out of the long-distance business until real, not just theoretical, local-loop competition is actually in place. Combined with its recent hands-off cable TV/Internet leanings, this oft-maligned agency could actually make three strong decisions in a row.

Such light, yet skilled, interventions may not make you feel much better about many of the gross imbalances in our system, but it would be nice to know that, at least sometimes, there are some limits to what some businesses can do. ■

STEVE ULFELDER

Wise up, you elitists: The Web's for everyone now

PICTURE A PHALANX of goateed 26-year-olds squinting into the distance. They're Internet millionaires, and they're on edge — looking for Stone Cold Steve Austin T-shirts, listening for Shania Twain CDs. Why the red alert? There are reliable reports that the great unwashed are headed for the Internet in their Chevy pickups. And while these philistines' money is welcome, their sensibilities are not.



STEVE ULFELDER is a Computerworld features writer. Contact him at steve_ulfelder@computerworld.com.

Nobody at the recent IDC Internet Executive Forum held in San Francisco said businesses need to dumb down their Web sites to prepare for the Attack of the Kmart People — but you got the feeling that's what they meant.

According to Framingham, Mass.-based International Data Corp. (IDC), there were 78 million Americans online at the end of 1998. And primo Americans they were: educated big earners who like to spend money. Think of them as 78 million first-class passengers who were first to board a very large airplane.

Well, here come the coach people. Less educated, less affluent, older. (With broadband creeping into so many homes and good PCs running \$150 after rebates, who'd you expect? Thurston Howell the Freaking Third?) Ninety-nine million such

economy surfers will go online by 2003, IDC says.

If you're doing e-commerce right, this demographic shift won't require much change on your part. But given the numbers and the preposterous fear of commoners I sensed at the forum, you have to wonder how many businesses are doing it right.

IDC says that with the influx of the proletariat, the watchwords for commerce sites will be *simplicity* (make it easy to use) and *obviousness* (make sure the site looks like it does what it does).

Simplicity? Obviousness (i.e., clarity)? Don't those sound like pretty good goals for any interaction, with any customer, in any medium? If your Web site has one of those arty welcome screens or features lots of JavaScript parlor tricks, I've got news for you: Plenty of consumers are blowing right past already. Even a Ph.D. with a \$100 bill sticking out his ear has better things to do than look at your award-winning splash screen.

And yet a funny thing happened on the way to the People's Network. Far too many sites that ought to know better are by, for and about youngish, college-educated, post-Letterman professionals who know every Starbucks in their county but haven't set foot in a Burger King in 10 years.

Barry Parr, director of IDC's Consumer Internet operation, has dubbed 1999 "the year Mom went online." It's a good line, and it caught my attention because it happens to be true for me.

But my mom is very smart. So is the high-school graduate who works on my cars. So is my friend who stocks shelves at Stop & Shop. I have a feeling somebody is underestimating somebody here — committing the cardinal sin, perhaps, of confusing education with intelligence.

It's no coincidence that another hot topic at the IDC forum was the empty-shopping-cart phenomenon. Perhaps as many as 70% of online shoppers who select items flit away before closing the deal. Ask any retailer if that ghastly abandonment rate would be acceptable in the brick-and-mortar world.

So: We have created a medium that we swear will revolutionize commerce. But just as we put in place the infrastructure, hardware and momentum to kick that revolution into high gear, we discover we've tailored the medium to a tiny group of elites — and that even they are skittish about pulling the trigger on e-purchases. We've ignored elemental design, merchandising and selling truths in an effort to be hip and blasé and smart.

And that, as any Kmart shopper could tell you, is flat-out dumb. ■

READERS' LETTERS

Flat fee, mainframe devotion laughable

THE OCT. 4 PAGE One article "Service Debuts: IT at \$165/User" was amusing for two reasons:

The article states that users "have around-the-clock access to a technical support team dedicated to their company." My question is: Where in the (third) world is CenterBeam going to find knowledgeable, dedicated support people for \$165 per month per PC for 24/7 coverage? I want assurances that my "dedicated" person supporting my five PCs isn't moonlighting by supporting other accounts.

I also want to know what Virginia Brooks at Aberdeen Group is smoking in her pipe. I have never heard that companies "hold on to the mainframe long after they should, simply because the mainframe guy wouldn't let go." Who

runs these companies, management or technicians? Could it be that they hold on to the mainframes because they work? Are reliable? Cost considerably less per seat?

Keep up the amusing, entertaining stories. They enliven my otherwise routine, boring days supporting 3,500-plus satisfied mainframe users.

Lee Smith
Holland, Mich.
Lee.Smith@haworth.com

A class of our own

I JUST WANTED to write a quick note to let you know how much I like your newspaper. I receive many weekly IT newspapers, including *PC Week* and *InfoWeek*, and I like yours the best. It is the only one that I have realized I need to take the time to read through. I enjoy the variety of information and how it is presented. I think your

newspaper is a step above the rest. Keep up the good work!

H. M. Brown
IT PC specialist
Creighton Cardiac Center
Omaha
hmbrown@cardiac.creighton.edu

AS/400 also 64-bit operating system

I WAS DISMAYED to see the Sept. 20 Technology QuickStudy ("64-Bit Update") made no mention of the AS/400, a true 64-bit system.

The operating system is fully 64-bit (no 32/48-bit code left), as are the applications and database.

Furthermore, when the AS/400 did the transition from a 48-bit platform to 64 bits, few, if any, applications had to be rewritten to take advantage of the new underlying technology. And aside from a couple of programs, none had to be recompiled. The system

handled that flawlessly.

I understand that the AS/400 is not as mainstream as Windows NT, but to say that "most end users... won't actually see 64-bit processors in the next five years" is a nearsighted statement when you consider that most AS/400 users have been using the PowerPC 64-bit technology for several years now and that there are quite a number of businesses and IT shops that use the AS/400 platform.

Jose Javier
Systems analyst
Medical Business Services
Coral Gables, Fla.
jul13@bellsouth.net

COMPUTERWORLD welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Allan E. Alter, columns editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 875-8931; Internet: letters@computerworld.com. Include an address and phone number for immediate verification.



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JOHN GANTZ

Bring out the dead! The IT zombies among us

EL DÍA DE LOS MUERTOS — The Day of the Dead — is a big deal in Mexico, where I spent a day several weeks ago discussing the Mexican IT market with 400 industry executives at Tendencias 2000. Although the holiday was weeks away, skeleton dolls, chocolate skulls and ghostly lollipops were all over the airport and hotel gift shops.

So, while peering into the future of e-commerce in Mexico (bright), I also started to think of which things in our IT environment might be

muerto without our realizing it. For example:

Year 2000. Most of the work is done. What's more, the impact of Y2K will be minimal, probably less than that of Hurricane Floyd. I have come to this conclusion after working on a special analyst task force at International Data Corp. that is using some unique worldwide research and economic analysis to quantify the impact of Y2K. No matter



JOHN GANTZ is a senior vice president at International Data Corp. in Framingham, Mass. Contact him at jgantz@idc.com.

how we tweak the assumptions in our model, we can't come up with much more than \$15 billion in lost revenue worldwide, which is less than 0.1% of the world economy. A blip.

Client/server. It was always an ugly phrase, but better than its predecessor, master/slave, which is what client/server was called in the 1970s. Although there will be death spasms for years — Windows 2000 will ensure that — browser/server computing will replace client/server computing. We'll still need PCs, but the idea of shoeorning client software into all manner of differently configured systems is obsolete.

Wintel. Not right away, but even in Mexico there's widespread belief that 1 million other form factors — from handheld phones to automobiles to TVs — will soon be integral to the networked economy. This is a future quite alien to the Intels and Microsofts that built the PC world. What does Intel know about embedded chips? What does Microsoft know about applications that run in 20K bytes?

PC dealers. This channel that was born when Computerland winked into existence is too inefficient to survive much into the next millennium. In the U.S., eMachines, offering free PCs with a three-year subscription to the Web, is now among the top 12 PC suppliers. In Mexico, the fastest-

growing channel is the phone company, growing from practically nothing last year to more than 20% of this year's market. In Brazil, banks sell computers. Worldwide, more than a quarter of all PCs are sold directly. Who needs a channel with 60 days of inventory built in?

EDI. Yes, there's still growth in the EDI market, but Web-based procurement systems will run right by this 20-year-old protocol. EDI vendors may be able to morph their offerings onto the Web by offering browser interfaces and end-user procurement applications, but more likely the explosion of vertical industry infomediaries and portals [see Gantz's column, News Opinion, Oct. 11] will put EDI six feet under.

Government-owned telecommunications monopolies.

They're zombies. Today even the stiffest of bureaucrats can see the writing on the wall: Deregulate or strangle. Wireless technology, cable television, satellite, cellular telephony — all these will be needed to accelerate the wiring of developing countries into the global, digital economy.

But, hey, don't let *La Muerta* get you down. Do as the Mexicans do and poke fun at it. ▀

ALEX KARPOVSKY

Should CIOs be chief e-commerce officers instead?

A RECENT QUOTE from Gartner Group will come as no surprise to IT professionals: "E-business will be seamlessly merged into the core business of any enterprise.

That is the next natural progression of IT's role in business." But as the *I* in IT is replaced by *e*, what will be the role of IT management?

IT's role has always been ambiguous. Some executives still view IT as a necessary evil; few CEOs were ecstatic about spending unplanned millions of dollars on Y2K just to continue doing business as usual. Others consider it to be an important, albeit unglamorous, support function. Yet others realize that technology and the Internet are the keys to the company's future competitiveness. What makes it difficult for IT is that all of these people work for the same company.

Add to this the diversity of tasks and systems that IT managers must master. Running a LAN has little in common with developing e-commerce applications, yet most people lump it all

into "computer staff responsibilities." A large percentage of current IT professionals are focused on ERP and Y2K issues. Are these people ready to implement a working electronic enterprise? And let's not be fooled by product announcements that describe how easy it is to create a Web-centric enterprise. These are uncharted waters, and it will be a while before making your enterprise Web-centric is as "easy" as, say, installing SAP.

Will business units take charge of strategic Web initiatives? This approach would result in a collection of applications that may not integrate with the existing infrastructure. And business unit executives are more susceptible to the notoriously unsubstantiated claims of technology vendors.

My prediction is that the IT department will stay in charge of important IT technology initiatives. But to do so successfully, the IT organization should be split into separate units for infrastructure and e-commerce, with the former serving as enabler and the latter as trailblazer, akin to the relationship between marketing and sales departments. Whether incumbent CIOs remain in charge of both units will depend on their ability to transform themselves from CIO to CeO — chief e-commerce officer — by adopting new traits and being proactive in creating the new organizational structure.

Successful CeOs will have to play on the revenue side of the business. They will be judged on their ability to make money. This means that they will have to understand the company's market position and sales process, work closely with the sales and marketing organizations and analyze the ROI (return on Internet) not as loosely defined cost savings but as hard profit increases.

The CeO will also be nimble. As Web technology rapidly evolves, the CeO's ability to quickly switch to "best-of-class" technology will affect the company's ability to succeed in the marketplace. However, it will remain important to know when not to switch. It takes a wise CIO to conduct due diligence, but it takes a true CeO to make the bold moves and hedge the risks.

Finally, the CeO needs to combine the best traits of commercial software product vendors and internal infrastructure developers. The vendors stay ahead by adding new features, courting clients, analyzing markets and looking for new niches. The internal developers succeed by ensuring the reliability of their deliveries.

Should the CIO and the CeO be the same person? We're talking about hugely diverse responsibilities and diverging priorities. I believe that two organizations are needed, one for information technology and another for electronic technology, but only one person should be in charge — assuming, of course, that that person is ready and able to take on the new challenges. Splitting such a position may lead to diverging technology directions, lack of integration, bickering and low morale. But as time goes on, the distinction between the infrastructure and "extrastructure" will become blurred, and these two IT organizations will merge again. It is, after all, just the computer staff. ▀



ALEX KARPOVSKY is president of Kanda Software, a Concord, Mass., Web application development company. Contact him at alex@kandasoft.com.

BUSINESS

TEEN SPENDING

Teens are the fastest-growing e-commerce segment on the Web, but they often lack the ability to pay for things on their own. Prepaid credit cards are just one method e-businesses are pitching to help rake in the hundreds of billions of dollars that teens spend or influence every year. **► 40**

ONLINE LOGISTICS

A host of e-commerce companies are offering to take over the annoyance of tracking supplies and goods other companies ship. The Web makes the interfaces easier, increasing the number of companies that can be involved and the ways they can match loads and methods to move them. **► 40**

IT EFFICIENCY

A new warehouse automation system is helping medical supplier Owens & Minor hold on to its razor-thin profit margin. The search for the right system took years, but O&M found a way to roll it out fast, for a quick advantage. **► 41**

POWER PLAY

Pacific Gas & Electric and Duke Power are on opposite coasts, but deregulation and their IT infrastructures help them compete in the commercial power arena. Both are spending big on trading systems to sell power faster, but analysts wonder if their upgrade frenzy is causing them to miss the consumer market. **► 46**

WEB POLITICS

The Net is dividing the people who work online from their colleagues who run the legacy portion of the business, Jim Champy writes. And IT people who aren't actively managing that divide are building a bombshell. **► 42**

PLAY BALL!

Major League Baseball is in the middle of its annual bacchanal, and we talked to the two techies most responsible for bringing fans into the action online — including on-field cameras fans can control over the Web. **► 42**

WEB SERVICES

The Web has made net connections so easy that IT organizations are outsourcing more apps than ever before — even “renting” applications they consider mission-critical. Web-based services can be cheaper and easier to roll out than comparable systems in-house, but most users surveyed draw the line at outsourcing core systems — no matter how easy it is. **► 44**

TIMING THE DEAL

When a vendor is pressing you to add more dollars up front in a licensing deal, sometimes adding more time at the back end of the deal can get you both a discount and a reduction in maintenance fees, Joe Auer advises. **► 58**

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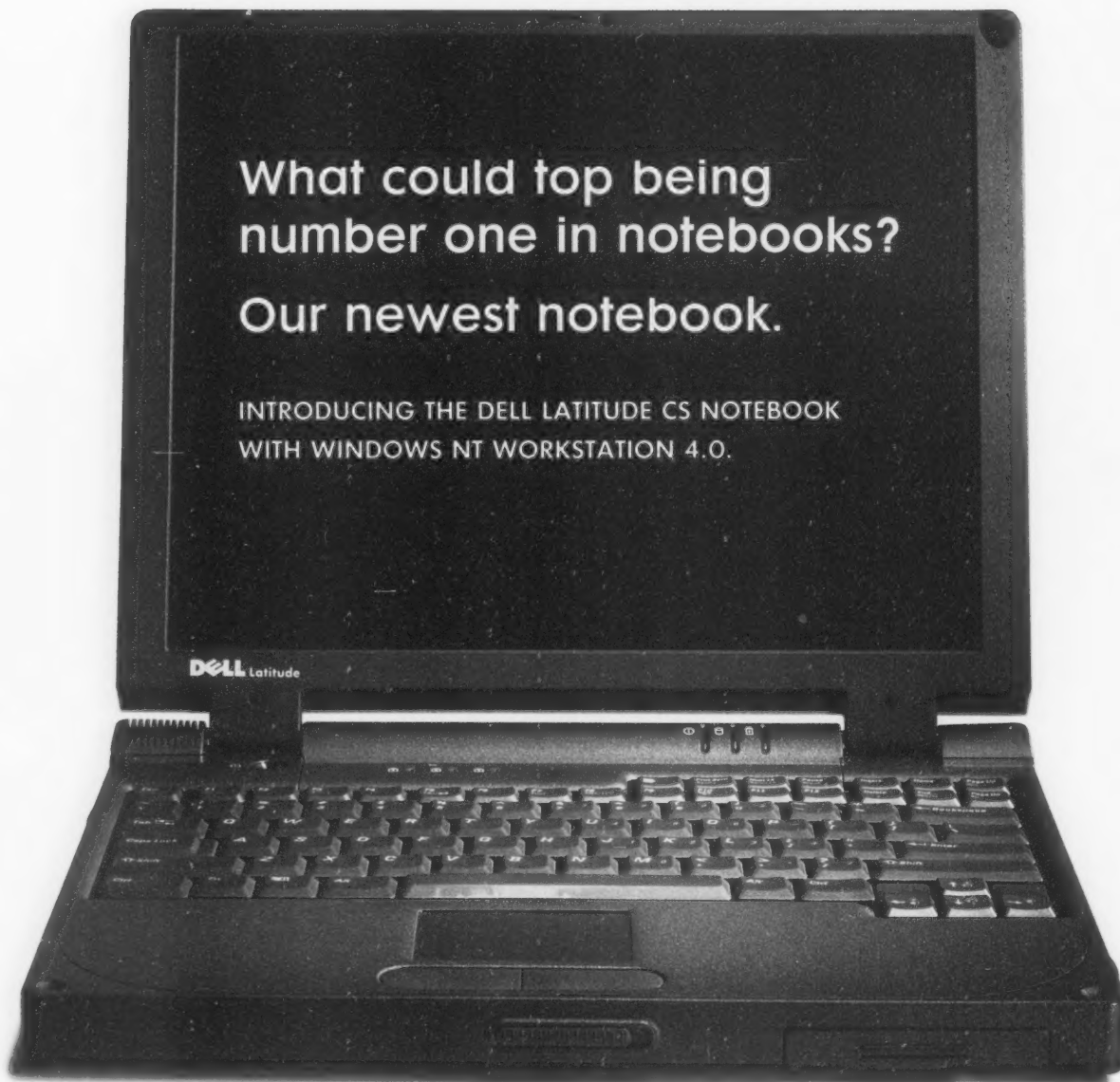
IT JOBS GO TO THE EXTREME

NIKKI STANGE (above) says her experience working a suicide hot line helps in her current job — counseling hysterical users (who have included Sting, Sean Connery and Keith Richards, as well as numerous top corporate officers). She's just one of the IT people we found with jobs so extreme, so cool or so challenging, even their least-techy friends never consider what they do boring.

52

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Teen Buyers Now Have New Ways to Pay Online

Paid shopping cards let teens shop online without a credit card

BY JULIA KING

THIS YEAR, teenagers will spend \$150 billion on jeans, cosmetics, music CDs and other consumer goods. They'll also influence another \$300 billion in purchases made by their parents and others.

Six out of 10 teens will buy at least one thing over the Internet, where 12- to 20-year-olds represent the fastest-growing online segment, according to Jupiter Communications LLC in New York.

In a nutshell, teens are a marketer's dream. There's just one problem: Lacking credit cards, most young buyers have had no means of paying for online goods themselves. That has meant dragging along Mom, Dad or some other adult every time they go to the cybermall, which is, like, so uncool.

San Francisco-based Cybermoola Inc. is looking to change that with a prepaid shopping

card that lets teens buy online without using a conventional credit card.

Instead, parents use their credit cards once to make a deposit into a teen's Cybermoola account. Because the accounts are prepaid, teens can't rack up credit-card debt, said Cybermoola President Eric Freeman.

JUST THE FACTS

Teens on The Net

- 19M U.S. teen-agers are online, 59% of the total teen population
- 67% of teens have purchased a product online in the past year
- Online spending by teens will rise to \$1.23B by 2003

SOURCE: JUPITER COMMUNICATIONS LLC, NEW YORK

At the same time, Cybermoola delivers additional revenue to online merchants because it captures a whole new audience — those buyers with-

out credit cards, Freeman said.

As prepaid cards grow in popularity, some online retailers that cater to teens expect they could even cut down on attempted credit-card fraud at their sites. The downside is that retailers won't reap that benefit until the cards gain wider acceptance.

In less than two months, more than 2,200 teens have opened prepaid shopping accounts at www.cybermoola.com. Since its Sept. 6 launch, the company also has given away about \$4 million worth of Cybermoola in \$20 increments at malls and teen events.

Cybermoola has initially signed up four teen-oriented online merchants — including EZCD.com, a custom music CD site, and outletmall.com — to accept the card. It expects to expand that list by year's end, competing with other teen payment options such as Saratoga, Calif.-based Rocket-Cash Corp.'s RocketCash, which lets parents set up preapproved spending accounts with their credit cards.

Freeman said Cybermoola also has gotten a lot of interest

from brick-and-mortar stores that are trying to leverage their real-world presence online by distributing the cards in their physical stores. Another new company, DoughNet.com, also is targeting teens with an online financial services site that combines online shopping with Internet-based banking, saving and charitable giving.

For online shopping, parents use a credit card to open and add to a Web-based DoughNet account for their teens. Teens can then draw on the preauthorized amount in their account to pay for goods at about 45 approved online retailers.

"Using DoughNet made a lot of sense, given our demographics," said Tom Williams, president of San Francisco-based Fusion.com, an online retailer of skateboards, ski equipment and gear for so-called extreme sports.

"We also get quite a bit of fraud with people trying to use other people's credit cards. We think DoughNet could cut down on that" because the payments are preapproved and guaranteed by an adult's credit card, Williams said.

Top 10 Teen Sites

- 1 www.alloyonline.com
- 2 www.nsync.com
- 3 www.bolt.com
- 4 www.audiofind.com
- 5 www.cjb.net
- 6 www.mtv.com
- 7 www.ign.com
- 8 www.expage.com
- 9 www.encyclopedia.com
- 10 www.gamespot.com

Note: Based on percentage of visitors who are ages 12-17

Melissa Bane, an electronic-commerce analyst at The Yankee Group in Boston, said she expects to see more online payment schemes "that let parents set a limit." But just how quickly online retailers embrace those remains to be seen.

"There aren't a lot of Web sites [that accept specialized teen payments] because they have enough problems to worry about with credit cards. They just haven't had the time to implement some of these other solutions," Bane said. ■

Logistics Outsourcing Creates Opportunities

Web makes outsourcing transport woes easier

BY JAIKUMAR VIJAYAN

It used to be that getting information on the status of shipments to Williams-Sonoma Inc. from its 7,000 suppliers worldwide involved an endless trail of phone calls, faxes and electronic data interchange links.

The information often was both incomplete and delayed and needed to be consolidated from multiple sources.

Since July, though, logistics staff at Williams-Sonoma — a billion-dollar home retailer in San Francisco — have been getting access to most of the same information, delivered to

company desktops in real time and in a consolidated fashion over the Web.

Helping the Boston-based company do this is Celarix Inc., a provider of online logistics services, which last week also launched an online service that lets members bid for services from competing carriers and shippers.

Celarix's Web site (www.celarix.com) pulls, consolidates and presents information from different logistics systems, foreign representatives, brokers and transportation services in

Williams-Sonoma's supply chain. The result: "Much greater visibility along the entire shipping process," said Lois Davis, vice president of international operations at the company.



NTE'S GREG ROCQUE: Logistics systems increase competitiveness

Celarix is one in a growing breed of online service providers leaping to cash in on the demand for simpler logistics management, said John Fontenello, an analyst at Boston-based AMR Research Inc.

The National Transportation Exchange (NTE) in Chicago has been offering an Internet-based

service since 1996, specializing in matching half-empty trucks with waiting loads.

Members of the exchange use NTE's site to post, locate, sell and buy available space on trucks that have already been assigned other shipments.

Unlike national Internet bulletin boards that have allowed carriers and shippers to post load and capacity information, NTE's search engine matches buyers and sellers over the Web and conducts the entire transaction on their behalf, said NTE President Greg Rocque.

A recently launched service even allows truckers to calculate their profit margins based on time, weight, distance, temperature and space requirements. Members pay a one-time fee to integrate NTE's system with their logistics systems. After that, they receive a cut on transactions

conducted via their site.

America's Second Harvest, one of the country's largest nonprofit hunger-relief agencies, will soon start using NTE to match truckers with surplus capacity with food donors. The Web-based matchup should reduce the time the process takes from days to a few hours, estimated Deborah Leff, CEO of America's Second Harvest.

"The supply chain has become a means for sustainable competitive advantage," said Rocque. "Shippers are looking for ways to remove inefficiencies, decrease costs, improve service and improve information visibility. We bring all those to the table." ■

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Warehouse Overhaul to Fatten Supplier's Slim Margins

Firm aims to improve inventory accuracy

BY THOMAS HOFFMAN

Owens & Minor Inc., a \$3.05 billion wholesale distributor of medical and surgical supplies, already runs a tight ship, according to Wall Street analysts.

It keeps its costs down, does a good job of keeping track of inventory and doesn't lose its merchandise, they say.

But thanks to a new \$5 million warehouse management system it recently rolled out to its 39 U.S. warehouses, the Glen Allen, Va.-based company is about to become even more efficient.

Owens & Minor, the nation's leading medical supplies distributor, says it expects the new warehouse management

This increase "should reduce our overtime and temporary help" costs, said Smith. The first quantifiable cost savings should become evident by mid-December, he added.

The new system gives Owens & Minor a greater variety of pick methods to choose from when putting together a customer's shipment. As a result, it lets the company's warehouse workers fill orders for several customers at the same time, reducing the number of trips they need to make to gather products in the warehouse, said Caine.

The numbers on the project don't surprise Wall Street analysts, who already consider the company an efficient supplier. For example, Owens & Minor's return on equity for the past 12 months — a measurement that tells shareholders how effectively their money is being

deployed — stands at 15.1%, compared with 13.2% and 2.3% for industry rivals Cardinal Health Inc. in Dublin, Ohio, and Bergen Brunswig Corp. in Orange, Calif., respectively. Owens & Minor "is the most efficiently run company in the [medical supplies] market," said Bob Willoughby, a health care analyst at Credit Suisse First Boston Corp. in New York.

The deployment of a more efficient warehouse management system is a major benefit for a company like Owens & Minor, which ships 90% of its syringes, sutures and 140,000 other products to hospitals. As hospital profits are squeezed by managed care companies, profit margins for suppliers like Owens & Minor become razor thin. Net income as a percentage of sales last year was a meager 1% at the company, Willoughby said.

Owens & Minor took an arguably circuitous route to selecting and installing the Cambar system. The company had been using a mainframe-based warehousing system from Cambar since the mid-1980s. But by the early 1990s, the system was becoming expensive to maintain and difficult to customize to meet the needs of its decentralized operations, said Caine.

The company wanted to select a distributed warehouse system that could be tweaked to meet specific workflow requirements at each site. For example, a warehouse in Dallas might have to separate orders for 75% of its hospital customers, while another warehouse in San Francisco might ship 75% of those orders in bulk.

The company tested two compara-

tively open systems in the mid-1990s, but neither was flexible enough to meet the needs of all 39 warehouses. "We didn't want a separate warehousing system for each of the 39 sites," said Caine.

In 1997, the company's year 2000 review team — pushing to replace the

mainframe system that represented one quarter of the company's computing environment — recommended a client/server system from Cambar because of its flexibility in both technical and business functions. Owens & Minor kicked off a design phase of the new system in January 1998 and began piloting the Cambar system in June of that year. The company finished a fast-track rollout in August. ■

How to Fast-Track an Automation Project

Rolling out a fully integrated warehousing system to 39 locations would normally take two to three years at a company like Owens & Minor. But the company fast-tracked the project to beat year 2000 deadlines by hand-picking 20 of its brightest and most technically astute warehouse staffers and teaching them to train others on the new system. It finished the rollout in just 12 months, said Pat Caine, project director for warehouse management systems at Owens & Minor.

Under this program, warehouse employees based in Jacksonville, Fla., for example,

would work half a month there and spend the other half training staffers on the Cambar system in warehouse locations such as San Francisco or Boston.

"Our [business] divisions unselfishly gave up some of their best people to get this project done on time," noted Craig Smith, Owens & Minor's president and chief operating officer. "That's why the project was rolled out so quickly, because the [trainers] who worked with their peers have the knowledge of Owens & Minor's approach and business."

— Thomas Hoffman



PAT CAINE: "There's not a point in time when the product arrives at our door that we don't know where it is"

system from Cambar Software Inc. in Charleston, S.C., to help improve its inventory accuracy from about 89% today to a percentage in the mid-90s by year's end or shortly thereafter, said Pat Caine, project director for warehouse management systems at Owens & Minor.

"There's not a point in time when the product arrives at our door that we don't know where it is," Caine said. The anticipated increases in inventory accuracy should reduce the amount of inventory the company carries, thereby reducing costs even further. Caine said the company's projection is that the \$5 million investment will pay for itself in two years, at a cost of roughly \$128,500 per warehouse location.

The new system is already paying dividends. Since the company finished rolling it out in August, its warehouse staffs have been able to pick (sort and itemize) through 10% more products per hour than they could a year ago, said Craig Smith, Owens & Minor's president and chief operating officer.

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WORKSTYLES

Gearing Up for the World Series

As the curse of the Bambino wore down Boston Red Sox, and the New York Mets proved truly amazing in a 15-inning win over the Atlanta Braves, Major League Baseball.com was busy capturing it all.

The Web site aims to "put the World Series in context, setting the stage for the games that will be played," says Alex Kam, director of the new-media group at Major League Baseball Enterprises Inc. in New York.



During the League Championship Series, *Computerworld* spoke with Kam and Jonathan Giannettino, the site's managing producer, about working on the Web in the Big Leagues.

How big is your staff? 15 in a maintenance mode; up to 40 in a peak production cycle.

Most popular features: Results, schedules, statistics, audio broadcasts and video clips.

New postseason features:

- Spanish-language audio.
 - Enhanced historical video footage and stills, including "Team of the Century" biographies and balloting.
 - Player Match-Up, a game that lets visitors compare the statistics of two postseason players.
 - Season-in-Review, which offers [daily and monthly] highlights of the regular season, posted between Oct. 13 and 27.
 - Personal Pictures, which enables fans to capture live still images during the World Series.
- Kam:** We want to provide comprehensive coverage and complete, exciting experience of baseball. We provide coverage of every game pitch-by-pitch, with video and audio all year, but we add a lot of bells and whistles for the postseason.

Site partners: SportsLine USA Inc., site host and technical infrastructure provider; Yahoo Inc.'s Broadcast.com for audio feeds; Perceptual Robotics Inc. for live game photos; plus others.

On adding the new features: Giannettino: It has been a 24-

hour-per-day job for [three] weeks now. I make it home at some point in the evening, but I'm strapped to my pager, my cell phone and e-mail - I'm always wired to the situation. I missed most of the [League Championship Series] games because I've been monitoring the site, making sure it's all running smoothly. But I will be at the World Series because with the new features we'll be adding, I'll need to be there to manage them on-site.

On partner relationships: Giannettino: SportsLine has a coordinating producer in Florida who I work with throughout the day. We develop plans together about how we'll get things done. Once the plan is set, they execute it, and I monitor deadlines and deliverables. We have other partners providing us with different features, some of which are still being developed. We expect everything to be ready to go, and we're optimistic, but with technology, you never know.

How does the Personal Pictures feature work?

Giannettino: Several special cameras, controlled by Perceptual Robotics software, will be installed in each ballpark for the World Series. [The cameras] will enable users to traverse around the park and aim at or zoom in on a player or section of the field. The software uses caching technology to allow many different users to control the same camera at the same time. As traffic increases, a sophisticated caching process identifies similar user requests and re-uses pictures taken seconds earlier to satisfy everyone, while remaining fast and live. So if you have 200 people clicking [in one] area, instead of 200 unique photos, there's one photo approximating what the user targets.

Post-postseason plans:

Kam: I think we'll take a break. A vacation maybe. We still have a lot of things going on because baseball is becoming a year-round sport - [with events] like the Arizona Fall League.

What's it like to work in Major League Baseball?:

Kam: It's great to have the responsibility of developing a baseball product. I'm a very big baseball fan, so it's a double blessing. Giannettino: If you're going to be on call 24 hours a day, I can't think of a better subject to be involved with. - Leslie Goff

JIM CHAMPY

The new IT politics

FOR 50 YEARS, the politics within companies has clearly changed with the introduction of each new technology platform. With the arrival of the Internet, it will happen again, only more dramatically. The Internet will bring about radical changes to millions of jobs, creating a politics of haves vs. have-nots. The haves will be the people who are dealing with

Web-based technologies and have the opportunity to work in the new businesses that the Internet enables. The have-nots will be the people who live with the legacy of old businesses and their technologies.

Tensions between the two camps will have to be actively managed. Eventually, new and old businesses will have to be integrated or old businesses will have to be jettisoned. This will require heightened management awareness and some hard decisions.

Make no mistake — technology has a political dimension. When big mainframes started to populate corporate headquarters, there was no doubt about what the dominant style of corporate behavior was: centralization. Decisions were made for the corporate good, and everyone accepted the rules and policies that were centrally set — both about the business and technology.

With the advent of midsize machines in the 1970s, power started to shift to departments and business units. Perhaps it was just a coincidence, but as computing became more distributed, organizations became more fragmented. You weren't a company person as much as you were from human resources, finance, sales or manufacturing.

Then came the explosion of personal computing and server technology. The mantra was one of individual empowerment. PCs meant the democratization of information and computing.

The politics of the Internet may at first seem to belong to a connected world — you, your customers, your suppliers, even your competitors, all cooking some delicious stew of enhanced consumer value. Don't kid yourself. The politics of the Internet is about the haves and have-nots.

Within the IT services industry, the divide is between the old-guard applications developers, integrators, outsourcers and software providers (let's call them the conservatives) and the new e-inspired start-ups that provide Internet-based systems and services (let's call them the liberals).

The conservatives are generally envious of the

high price-earnings ratios that some of the liberals get on their stock. So the conservatives mount elaborate marketing campaigns to convince the world that they, too, are cool.

But this problem will eventually sort itself out without revolution. Markets will see who delivers value and who makes profits — and the world will return to normal.

A fiercer battle will ensue within other kinds of companies as they try to change over to new operating models. Some people will be left behind in the old business as others move to the new business — for instance, when Barnes &

Noble started its new e-commerce operation, some folks were left selling books in bookstores, while others moved into the future.

There is a sense of the old and the new, and people will know which party they belong to — and it won't always be of their own choosing.

This may be the first time that a technology platform has caused such a dislocation. Why? Because, unlike earlier technologies, the Internet will dramatically change every process in a company. Today, the Internet is principally seen as a new mechanism for ordering and selling. Soon, it will affect research, product development, manufacturing, service and order fulfillment.

Working people know that sometime within the next 10 years their jobs will change. It will take that long because most companies will be slower to change than the technologies they are using. But managers need to take these matters seriously: There is a slow revolution going on in the nature of work. People need to be repositioned and retrained, or they will once again slow

down business change.

The new politics of IT must be actively managed. It's not enough to go with the flow. ■

Some people will be left behind in the old business as others move to the new business.



Champy is chairman of consulting at Perot Systems Corp. in Cambridge, Mass. He can be reached at JimChampy@ps.net. His newspaper columns are syndicated by Tribune Media Services.

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IT organizations are finding needed applications and services on the Web, helping them fill gaps, save money and focus more on strategy. But it won't spell corporate IT's demise
By Debra Malina

THINK OF THE WEB as a public pipeline: Just as utilities pump water, electricity and gas into your home, a new kind of utility now pumps information services over the Web and into businesses. In theory, any service provided by in-house IT departments — from developing, hosting and maintaining applications to managing databases and networks — may now be delivered over the Web.

Steve Furst has bet his business on one such Web-based service, while Steve Soderberg uses one only for the circumscribed tasks of human resources administration. For Furst, founder of a virtual company, the Web is home: NetGift Registry Inc. in Research Triangle Park, N.C., is an Internet start-up that lives or dies on the strength of its Web site, developed and hosted by USInternetworking Inc. (USD) in Annapolis, Md. Soderberg, senior vice president for information technology at Robert Mondavi Corp. in Oakville, Calif., has a much less committed relationship with the Web. "Renting" human resources applications from Oracle Business OnLine helped him sidestep the Y2K problems of his old human resources system. He'll consider using other such services, but their mode of delivery won't be the deciding factor.

One can extrapolate from these two experiences two visions of the future of corporate IT: a revolution in which all IT services will be delivered over the Web, eradicating in-house IT, or an evolution that allows corporate IT to focus more on strategic, rather than administrative, responsibilities.

The movement has clearly begun: Some 22% of readers surveyed by *Computerworld* in July use Web-based IT services, and another 9% expect to join them within a year. Moreover, the majority of these users consider the services they buy over the Web to be mission-critical. But when questioned, most users draw the line at their companies' crown jewels, those services that distinguish them from their competitors.

Different-size companies are attracted to these services to varying degrees and for varying reasons. For many small companies, especially dot.coms, the option of receiving IT services over the Web solves myriad problems: They have access to skills, software and computing power they could never afford to buy.

Marty Gruhn, Phoenix-based vice president for Internet business solutions at Summit Strategies Inc., says that if she had implemented Lotus Development Corp.'s Instant Teamroom groupware herself, it would have cost \$25,000. Instead, she solved the problem of Summit's Site Intelligence analyst group by renting the groupware over the Web from Interliant Inc. in Purchase, N.Y., for \$15 per user per month. "To get to \$25,000, I would have to put [everyone in] the known universe on this thing," says Gruhn. "The economics of it are obvious." Speedy implementation is also attractive: Furst estimates that what takes USI three months to implement would have eaten up a year of NetGift's time.

Small businesses and dot.coms are the service providers' first targets. Kathy Dodsworth-Rugani, di-

Net Gain for IT?

The applications that organizations use or plan to procure from the Web aren't necessarily their top mission-critical ones.

Q. For which of your applications are you using or will use a Web applications service provider? And, which of those applications are mission-critical to your business?

	USE OR PLAN TO USE	MISSION- CRITICAL
Customer relationship management	59%	60%
E-commerce	59%	73%
Messaging (e-mail, groupware)	53%	63%
Decision-support	45%	52%
Project management	37%	47%
Supply-chain management	33%	82%
Enterprise resource planning	31%	81%
Desktop productivity (office suites)	27%	86%

Multiple responses allowed

The top motivations for Web-based services? Speed, quality and cost.

Q. Which factors were important in your organization's decision or consideration to use Web-based application services?

Speed of implementation	75%
Cost of application development	67%
Lack of in-house expertise	61%
Cost of application management	57%
Labor shortage	41%

But security remains the chief concern with Web-based application services.

Q. Which issues are of great concern to you regarding your organization's use of Web-based application services?

Security	96%
Reliability and stability of application service provider as a long-term partner	94%
Availability of applications or uptime	80%

MORE THIS ISSUE

Application service providers find a niche in large corporations.
See Field Report, page 74.

key IT serv



NETGIFT REGISTRY'S STEVE FURST leaves the hosting of his Web site to USInternetworking. He estimates that what takes USI three months to implement would have taken a year for NetGift.

rector of hosted business applications at IBM Global Services, suggests that smaller businesses may be accustomed to relying on outside firms and so prove less squeamish about outsourcing. The dot.coms, note analysts and service providers, are even more amenable, having embraced the Web as their lifeblood.

If you looked only at Internet start-ups, you might accept the grand vision of "e-services" painted by Hewlett-Packard Co., which sees the potential for outsourcing not only IT functions but also a vast menu of business tasks, often delivered via the intricate choreographing of multiple service providers.

In new Internet activity, explains John Metcalf, vice president of marketing at GetThere.com, an Internet travel service in Palo Alto, Calif., users no longer surf the Web. "You're working with multiple suppliers and bringing them together intelligently to solve a problem," enabling sites to launch processes that "talk to" other sites and return with the best solution. Because these services span myriad functions, service providers market them not only to IT, but also to heads of business departments, who can often bypass IT.

But even those who embrace revolutionary visions leave room for an internal IT role. Even NetGift Registry has a chief technologist, who acts as a liaison with USI and integrates NetGift's vendors into its system. NetGift sees its core competency as marketing, and therefore retains in-house IT expertise to provide the technological underpinnings of key relationships.

When you look at these pockets of resistance to outsourcing within Web-wowed organizations, you glimpse a future where corporate IT is no endangered species. Here, the mantra is "core competencies": If a process is the sine qua non of your value, keep it inside your walls.

For other processes, cost-effectiveness will be the

key to adoption by traditional and large companies, where IT departments run on budgets. There, says Gopi Bala, director of management strategies research at The Yankee Group in Boston, "anything that can have an impact on lowering costs without changing the governance of the organization and without losing talent for other projects" will pique one's interest.

This won't lead to a mass exodus of IT functions from the average organization. Indeed, with more non-IT functions moving to the Web, IT organizations may play an ever more critical role. The services offered by GetThere.com were historically the bailiwick of travel managers; their move to the Web ropes IT into a new arena. IT must integrate the application into the corporate environment, but then it can advance to another plane, using the built-in data management and analysis tools to cut costs.

The increase in business-to-business Web transactions for diverse functions will give IT strategic responsibilities — such as translating business needs into technical solutions, managing outsourcer relationships, monitoring and analyzing service usage — even as it reduces its administrative burden.

Moreover, companies outsourcing certain IT functions are discovering that they themselves can provide key IT services over the Web, perhaps becoming Web portals for their customers, says Yanni Kalajakis, director of industry solutions at Sun Microsystems Inc.'s service provider group.

So IT directors laugh at the suggestion that Web outsourcers threaten their livelihood. Although many express concerns about Web-based IT services (see related story at right), job loss isn't among them. ■

Malina is a freelance writer in Cambridge, Mass.

What's Your Worry?

Why hesitate to hop onto the Webwagon? Five top reasons:

1. Security. Do you want to put inside information on a public network? Some have overriding concerns: John Cooper, manager of information systems support at Baptist Memorial Hospital in Huntington, Tenn., cites right-to-privacy laws, saying that "patient confidentiality forbids us to have anything that might be insecure on the Internet."

Brent Andrew, director of corporate strategy at Air-Touch Communications Inc., a San Francisco telecommunications firm, says you can minimize risk. "You construct ways that make it difficult to find you; you don't advertise where stuff is or what you have; you're simply low-key about" what you've put on the Web, he says.

Kathy Dodsworth-Rugani at IBM Global Services notes that security issues arise both on and off the Internet and that technologies exist to address needs ranging from secure access points for e-mail to firewalls for Web storefronts.

2. Reliability and stability of service providers.

With so many service providers young and untied, which do you trust? First, find one with experience with the desired service (on- or off-line), and make sure your provider signs service-level agreements. Sun is helping ease this worry with the SunTone Architectural Council, a group of technology companies and service providers that will establish specifications for service provider quality of service, hardware infrastructure and operational processes.

3. Downtime. Though many customers turn to service providers for the availability of both the Internet and megaservers, downtime is still a risk. For a dot.com's Web site, 24/7 availability is crucial. "You have to look at the bandwidth" available from your service provider, says Summit Strategies' Marty Gruhn, "and you need to make sure the system's virtually instantly available."

4. Pricing variations and dependencies. Attractive pricing may lure customers to this alternative IT style, but what happens once you're hooked? David Cavanaugh, CIO at Specialized Tech Resources, a quality assurance firm in Enfield, Conn., says he fears that once application service providers begin to offer custom applications for industry niches, competition will be scarce. Then, he says, "there's a real possibility of having too much dependency on someone who [can therefore begin] playing games with pricing."

So far, users seem satisfied that they're saving by renting rather than buying, and analytic tools enable them to see which "users" are inactive. But customers renting applications that are difficult to drop need an exit strategy.

5. Loss of control. When outsourcing, "the lack-of-control feeling can be scary," says Bob Flesher, president of Rdental.com, an online resource center for dentists, whose Web site is developed and hosted by USInternetworking. But if you choose your partner carefully, says Flesher, "the risk is minimal." In one sense, he adds, it's less risky to outsource: If an employee starts a project and then leaves the company, you're stuck. A specialized service provider has layers of backup on hand. — Debra Malina

ices.com

POWER STRUGGLE

PG&E and Duke Energy may be a continent apart, but, helped largely by IT, both are competing to position themselves as prime players in the new world of an industry turned inside-out by deregulation
By Deborah Radcliff

SIZE MATTERS in today's deregulating energy industry. At stake is a domestic consumption that amounted to \$515.8 billion in 1995, according to the Energy Information Administration in Washington, an information-gathering arm of the Department of Energy.

As deregulation unfolds across the country, utility companies are transforming themselves to stay ahead in a rapidly changing market. In doing so, they're spinning off deregulated arms, and they're buying and divesting divisions. Analysts predict that during the next 10 years, the energy industry will go the way of the deregulated telecommunications industry, with a few consolidated giants at the top.

The biggest energy conglomerates are best positioned to get there and stay there, say analysts. Houston-based Enron Corp., with \$31.3 billion in revenue last year, is clearly on top. But two companies are close behind: PG&E Corp. in San Francisco, which took in nearly \$20 billion last year, and Duke Energy Corp. in Charlotte, N.C., at \$17 billion. Behind those is the company that will be created through the planned merger next month of PECO Energy Co. in Philadelphia and Unicom Corp. in Chicago. Those companies took in a combined \$11.6 billion in revenue last year.

PG&E and Duke are acquiring a record number of

production plants and delivery outlets as they compete for big energy-consuming business customers and the wholesale energy-trading market.

But big companies also have the most to lose. While Duke and PG&E have size in their favor, it's their information technology that, in the long run, will determine who wins and who loses in this dynamic market.

"These big utilities are awfully big and complex organizations, so there's a real chance they'll be outmaneuvered," says David Cain, manager of information systems and telecommunications at the Electric Power Research Institute (EPRI), an industry-funded research, analysis and development group in Washington. "Systems dealing with energy procurement, wholesale trading, brokering and scheduling will all be key to revenue management."

Duke and PG&E had better move with the speed and agility of a cheetah. Otherwise they could drop behind younger, faster-moving companies or faster-growing conglomerates like the soon-to-merge PECO and Unicom.

"As deregulation winnows the number of utilities over the next 15 years, the speed with which companies can move forward will ultimately determine the winners," says Peter Punwani, a consultant at Computer Sciences Corp. (CSC), an El Segundo, Calif.

ER LE



PG&E CORP.



[THE] TECHNOLOGY STRATEGY THAT WE PUT TOGETHER IS LOCKING OUR FOUR BUSINESSES TOGETHER.

JOHN KEAST, VICE PRESIDENT AND CIO,
PG&E CORP.



DUKE ENERGY CORP.



EACH AND EVERY UTILITY RIGHT NOW IS DETERMINING ITS NICHE.

CECIL SMITH, CIO,
DUKE ENERGY CORP.

based business and technology consulting firm.

Because they're expanding so quickly, Duke and PG&E have placed strong emphasis on integrating subsidiary companies and business units. Second on their agendas is delivery of real-time information to energy subsidiary companies, traders and vendors.

PG&E and Duke are expanding into new niche markets — mainly wholesale energy trading, production and delivery. Both are also building customer service applications to enhance the value of offerings to their large corporate customers, some of which are so large they have on-site energy generation plants. Duke also has a couple of other balls in the air, such as environmental services and global energy production.

It's the overlapping areas — energy production and delivery, energy services for commercial customers and wholesale trading — where PG&E and Duke compete directly.

PG&E: Integrate, Communicate

In 1996, Pacific Gas and Electric Co. in San Francisco spun off a deregulated company, PG&E Corp., in order to expand into a borderless energy market. But after the spin-off, PG&E struggled with legacy mainframe systems that didn't integrate or interoperate for sharing information across its businesses.

Last fall, John Keast, formerly CIO at PG&E Energy Services, was promoted to head information systems and support PG&E Corp.'s national energy strategy.

"The whole technology strategy that we put together is locking our four businesses together and facilitating the flow of real-time information between them," says Keast, now vice president and CIO at PG&E Corp.

Shortly after his promotion, Keast's team established the following goals for the company:

- Link business units, standardize applications and build an infrastructure to share information among PG&E's four companies.
- Get the wholesale traders off spreadsheets and onto a real-time information system that links the energy-trading floor to generation and delivery plants.
- Enhance energy services for its business customers.

Keast and his team have spent about \$5 million to accomplish these goals. Foremost among their efforts was building a common infrastructure over which all other applications now run. This involved redesigning backbone networks and building a common messaging system that swapped a mishmash of e-mail applications and Lotus Development Corp.'s Notes for Microsoft Corp.'s Exchange and Outlook.

With the new infrastructure in place, PG&E then

tackled information access.

Because so many people were moving from the regulated utility to subsidiary companies, Keast's team started by standardizing on a human resources platform from Pleasanton, Calif.-based PeopleSoft Inc. Before that, human resources managers spent too much time tracking things like employee benefits off disparate legacy systems, Keast explains.

"We needed a common benefits platform so we could transfer people seamlessly," he says.

Energy traders suffered similar information blindness. Working in a fast-paced trading environment, traders couldn't quickly find the energy pricing and availability information they needed.

To understand this problem, one must understand energy trading. It works like this: Electric generation plants that burn fuel to produce energy, along with Fortune 1,000 companies that maintain their own plants, bid on excess energy that PG&E has offered on the trading floor. PG&E traders price that energy based on the availability of sources (coal, oil, natural gas, hydro or nuclear) as well as such factors as usage, demand and even the weather.

To accurately price energy at the time of sale,

Continued on page 50



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Continued from page 47

PG&E traders need all this information instantaneously. Delays could cause customers to move to another energy trader like Duke Wholesale Trading, which has built a similar trading system of its own.

In the past year, PG&E's generation and delivery plants have linked into the trading system, providing instant supply, availability and resource information for PG&E traders.

"With the trading system, we can simulate what's going on in the market with real-time pricing so we can make those trades," says Keast. "This is our energy supply chain. We're pushing several billion dollars of revenues through this e-business platform."

Duke: The 'Energy Value Chain'

Similarly, Duke Energy has thrown a lot of effort at its electronic trading application.

"Trading and selling is technology. Our system here is operational — a real-time, online trading floor system that links our traders, operators, buyers and suppliers to bid and check on availability," says Cecil Smith, Duke's CIO.

Duke Energy Corp. formed in 1997, when Duke Power Co., a regulated utility with 2 million customers in North Carolina, merged with PanEnergy Corp., a natural gas pipeline company in Houston. Since then, Duke has acquired a number of production, storage and delivery companies to expand its offerings and market share.

Because of its quick expansion, Duke has faced the same systems integration issues as PG&E. Since Duke's businesses complement one another, the company aimed to develop a backbone that would make it easier for the units to tap into one another's service offerings.

"Duke Energy North America owns a plant that will come online in Hidalgo County, Texas. [The construction company] Duke/Fluor Daniel will build the plant. Duke Engineering and Services Co. will provide the engineering services. Then Duke Energy Trading and Marketing Co. will, through wholesale trading, acquire the gas to fuel the plant, then sell the electricity generated from the plant," says Smith.

Duke also needed to link business units to better serve valuable commercial customers. Duke's energy management services division uses a Web interface to push energy usage evaluations and efficiency suggestions to business clients. To help these clients find the cheapest energy available, the energy management unit must have access to other departments like procurement, production and delivery. If the client needs any related retrofitting or new building, Duke can build it through Duke/Fluor Daniel. The company calls this the "energy value chain."

THE COMPETITORS



Home: Charlotte, N.C.
1998 revenue: \$17 billion
Assets: \$30 billion
Subsidiary energy companies: Duke Solutions (business services), Duke Engineering and Services Co. and Duke Energy Trading and Marketing Co.
Presence: 50 countries, 30 states
IT personnel: 1,000
End users: 20,000
1999 IT budget: \$146 million for corporate center IT budget (doesn't include budgets for Duke's distributed business units)
Biggest value-add technology project: Year 2000 effort replaced eight systems; re-engineered customer system (billing, turn-ons, turn-offs, outage credits); real-time cost and performance system for plant operations; human resources system by PeopleSoft on DB2 (last year and this year); PeopleSoft Financial System (April 1998-January 1999)
Most pressing future technology project: Overall electronic-business efforts, including supply chain (slated for next year)



Home: San Francisco
1998 revenue: \$19.9 billion
Assets: \$33 billion
Subsidiary energy companies: PG&E Energy Services, PG&E Energy Trading, PG&E Gas Transmission and PG&E Generating
Presence: 27 states and provinces in U.S. and Canada
IT personnel: 1,500 (350 infrastructure specialists, 900 system implementers/programmers, and 250 other)
End users: 23,500
1999 IT budget: \$450 million
Biggest value-add technology project: SAP AG Financials and operational systems in nonutility businesses
Most pressing future technology project: Electronic procurement and electronic business

PG&E offers similar Web-based energy usage evaluation services. But it doesn't have the building and construction capabilities Duke has.

Duke's integrated network also facilitates a newly developed in-house cost and performance management system. With it, plant operators and corporate office workers can access the daily cost of plant operations. Moreover, they can use it to determine the cost of energy generation for the next business day.

"From an asset owner and plant operation standpoint, we can truly see if this is a marginally efficient plant, or whether we need to spend money on upgrading the plant," Smith explains. "And we can do this in a market that's dynamically different from state to state, country to country."

Shifting Loyalties

Duke and PG&E aren't so worried about losing household customers to one another, since their main residential markets are on opposite coasts. While PG&E eventually plans to set up residential services, Duke is staying out of the consumer retail market, mostly because the company doesn't think its loyal household customers will switch, a Duke spokesperson says.

It's with this kind of thinking that PG&E and Duke today may be doing themselves a disservice tomorrow, warn analysts.

"Nobody changed telephone carriers in the beginning of deregulation in the [telecommunications] industry" in the mid-1980s, says EPRI's Cain. "But now there's a lot of change and switching."



PG&E AND DUKE ARE
 BIG, POWERFUL
 ENERGY COMPANIES,
 AND THEY'RE
 PLAYING TO WIN.

DAVID CAIN,
 ELECTRIC POWER RESEARCH INSTITUTE

Consider, too, that Pacific Gas and Electric, the utility, is still operating off an antiquated customer information system, Cain continues. When competition for its 13 million customers in California heats up during the next five years, those customers will go to companies with juicier customer service offerings than PG&E can offer under its current system, he adds. PG&E has completed a four-phase update of its legacy customer information system to meet requirements for direct access mandated by the California Public Utilities Commission. And, says Keast, by 2002 the company expects to replace the remaining portions of the system to meet future market-driven changes.

With the average person spending \$2,412 on energy consumption in 1997, according to the U.S. Department of Labor, even a 10% loss would be costly.

To gain their next competitive advantage, PG&E and Duke need to reduce their overhead by automating their supply chains, says CSC's Punwani.

"Looking at an average utility, 18% of their cost is in the form of nonfuel supplies and services," he says. "Large companies like Duke and PG&E could command respect from suppliers and get volume discounts of 5% to 10% by buying this or that widget on a mass scale over the Internet."

PG&E is looking into automating its supply chain. Duke plans to implement electronic procurement capabilities from PeopleSoft next year. Both companies say they see electronic business as the quickest, cheapest way to implement such technologies.

This market jockeying on the part of PG&E and Duke is typical of what happens in a deregulating industry, according to analysts.

"Each and every utility right now is determining its niche," Smith says.

Which markets PG&E and Duke will ultimately cash in on is anyone's guess.

"The big utilities could default to transmission distribution companies, which will always be regulated," says Cain. "The question is, will they also become full-service providers and develop a very successful and vibrant unregulated arm that competes with the independents?"

Ultimately, Cain continues, the winners must not only have killer business strategies but also fast-moving, flexible information systems to fully support those strategies.

"How well the information systems are aligned with business strategy will determine whether a company wins or is a takeover candidate," Cain notes. "Both PG&E and Duke are big, powerful energy companies, and they're playing to win." ■

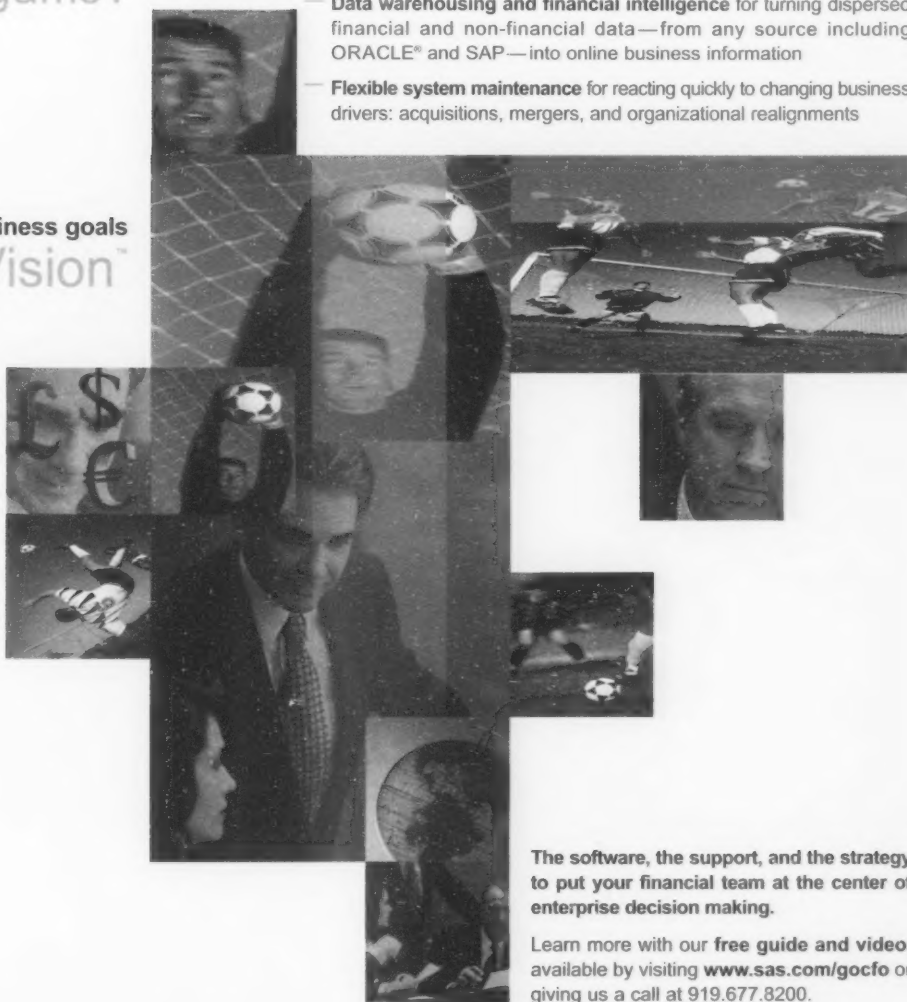
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KNOWLEDGE OF OPERATING SYSTEMS and storage is helpful for restoring hard drives, says Nikki Stange, but suicide-prevention counselor training might be even better.



EXTREME TECHIES

Whether they work in far-flung embassies or in the space program, with movie stars or baseball pros, some technologists get more than their fair share of excitement

By Bronwyn Fryer

Ari Kaplan

TITLE: Oracle database administration consultant, Chicago

CLIENTS INCLUDE: The Montreal Expos, Baltimore Orioles, San Diego Padres and Atlanta Braves, as well as Playboy Enterprises Inc. in Chicago and Fortune 1,000 companies.

WHAT HE DOES: Kaplan spends half his time building FoxPro- and Access-based computer systems for Major League Baseball teams. (Kaplan is the inventor of a statistical analysis methodology that helps scouts and managers assess players' abilities.) The rest of the time he works as an Oracle database administrator for clients like Playboy.

GREATEST CHALLENGE: Sticking to the consulting work that really appeals to him. (Kaplan says he dreams of managing a Major League Baseball team one day.)

GREATEST REWARD: Like Stange, Kaplan says he enjoys "interacting with a wide variety of people from Major League Baseball, military intelligence, telecommunications and the Hollywood film industry."

MEMORABLE MOMENTS: In 1997, he was named the California Institute of Technology's Alumnus of the Decade — putting him in the company of movie director Frank Capra and Nobel laureate Linus Pauling. He also makes frequent trips to Russia with University of Chicago professor Marvin Mäkinen.

Kaplan is working with Mäkinen on a database of clues to try to determine the fate of Raoul Wallenberg, the Swedish diplomat who saved at least 20,000 Hungarian Jews from the Nazis during World War II. (Wallenberg is said to have been imprisoned in a Soviet gulag, or labor camp, far past his "official" death in 1947.)



HOW HE GOT THE JOB: In September 1989, Kaplan presented his college research on baseball statistics analysis at a meeting of the California Institute of Technology's board of trustees. In the audience was Orioles owner Eli Jacobs, who was said to be impressed. Kaplan worked for the Orioles in 1990 and for the Padres during the summer of 1991. In 1992, he built a computer system for the Expos.

ADVICE TO JOB-SEEKERS: "Make yourself exposed to the community by writing articles for magazines, giving speeches at conferences and so on. All the cool jobs are only found by going the networking route."

Extreme Techies, page 54

Nikki Stange

TITLE: Data crisis counselor

EMPLOYER: DriveSavers Inc., Novato, Calif.

WHAT SHE DOES: Stange helps DriveSavers' hot line callers deal with anxiety when their computers are submerged underwater, run over, melted by fire or otherwise messed up. (DriveSavers boasts a 90% success rate in recovering lost data.) Stange routinely calms the nerves of celebrities (including Sting, Sean Connery, Isaac Hayes and Keith Richards), Hollywood studio heads and Fortune 1,000 CIOs.

GREATEST CHALLENGE: "When we're flooded with calls due to a natural disaster like Hurricane Floyd, that makes for a very busy, long day."

MEMORABLE MOMENTS: When the entire accounting database for a Fortune 500 company — and its backup — bought the farm, Stange says she helped the CEO through one of the darkest mo-

ments of his life. The CEO boarded a plane with the drive and sweated it out in Stange's office until the data was recovered. Saved from what he later described as a prospective "one-way trip on the Golden Gate Bridge," Stange says, the CEO "was ecstatic."

GREATEST REWARD: "I get to speak with such a diverse range of people — CEOs, Franciscan friars, Hollywood producers and people like Sting."

HOW SHE GOT THE JOB: Before signing on at DriveSavers in 1992, she worked at a hard drive company, where she learned the secrets of storage technology. Previously, she spent two years working on a suicide-prevention hot line.

ADVICE TO JOB-SEEKERS: Have in-depth knowledge of different types of operating systems and consider suicide-prevention training. "It allows you to gain an emotional objectivity, so that if someone is in a crisis, you can stay calm and guide them through a difficult situation."

Face it: Programming a line of code, sitting at a help desk or sweating it out in a network closet is pretty much the same experience the world over. Only the projects, people and places vary. Still, some information technology jobs are pretty unique.

In fact, if IT professionals ever held a contest for the most memorable moments on the job, Nikki Stange, Ari Kaplan, Greg Brandeau, Steve Jasak and Richard Alena could all vie for top prizes. Boring is a word that rarely, if ever, crosses their lips.

They work with movie stars and CEOs and on projects that most IT professionals can only dream about. But they are also living proof that wonderful — and extreme — jobs aren't unattainable. The following profiles offer a glimpse into the worlds of these professionals, how they got their jobs and their advice to career-minded folks who would like to emulate them.

EXTREME TECHIES

Greg Brandeau

TITLE: Vice president, computer operations

EMPLOYER: Pixar Animation Studios, Richmond, Calif.

WHAT HE DOES: Brandeau describes his job as "providing the electronic pens and pencils that people use to make *Toy Story* and *A Bug's Life*." He oversees acquisition and maintenance of the high-powered Silicon Graphics Inc. workstations and Sun Microsystems Inc. E4500 servers, as well as network equipment and telephony used by artists, software developers and producers at the Academy Award-winning company.

GREATEST CHALLENGE: Figuring out what high-end technology is needed to finish a film, which requires four years to make. "When you begin the film, you don't know how much computer power you need, but you still have to budget



for it. In the last eight months, you have to build flexibility and scalability onto technology that didn't exist when you started." (He's facing this problem now with *Toy Story 2*, due next month.)

MEMORABLE MOMENTS: Brandeau was able to shake hands with Bugs Bunny creator Chuck Jones. He also once heard a little boy say — upon seeing Brandeau's wife in a Pixar T-shirt — that he wanted to work at the company. "No one says that when you wear a Sun T-shirt," he laughs.

GREATEST REWARD: "At the end of the day, having a blockbuster film is what it's all about."

HOW HE GOT THE JOB: Connections. He worked for Pixar CEO Steve Jobs at Next Software Inc. as director of operations, overseeing hardware manufacturing and distribution of software. Joining Pixar in 1995, Brandeau helped build the computer infrastructure for *Toy Story*, the first fully computer-generated animated film.

ADVICE TO JOB-SEEKERS: Have a stratospheric IQ. "We want to hire people who are smarter than we are." Be demonstrably talented, hard-working and "play nice with the other kids." For more information on jobs, see Pixar's recruiting page at www.pixar.com/recruiting/index.html.

Steve Jasak

TITLE: Information management officer

EMPLOYER: U.S. State Department, Washington

WHAT HE DOES: As an information management officer for the State Department, Jasak oversees installation and maintenance of computer and communication systems, mail and diplomatic pouch services and telephony at all 260 U.S. embassies and consulates around the world. He must negotiate with host nations to provide telecommunications and other services for each embassy, which is the chief center of activity for thousands of State Department employees and their families who live overseas. "My job is to make a small city run," Jasak says.

GREATEST CHALLENGE: Working in foreign countries where the electrical or communications infrastructure may be limited or the political situation is unstable.

GREATEST REWARD: Helping the U.S. set up and strengthen democratic institutions and the rule of law throughout the world.

MEMORABLE MOMENTS: Jasak had the



experience of listening to armored tanks rattle into Moscow during the October 1993 attempted coup against Russia's President Boris Yeltsin. During the crisis, 300 spouses and children of U.S. personnel took refuge for three days in the embassy's underground gymnasium. When the situation stabilized, Jasak says he was delighted to inform exhausted friends and colleagues that "they could go home, feed the family pet and take a shower."

HOW HE GOT THE JOB: Jasak was hired as one of the department's first IT specialists in 1984; since then, he has worked at several embassies and consulates around the world.

ADVICE TO JOB-SEEKERS: Have vision, passion and commitment. "An embassy's job is to help countries develop and honor the order of law, an open media, nonproliferation of weapons and a democratic form of government," he says. As a representative of the U.S., the IT applicant should be well-grounded, both with technical experience and an interest in foreign languages and international affairs. For more information, check out the State Department's recruitment site at www.state.gov/www/careers.



NASA'S RICHARD ALENA says he enjoys the "camaraderie with the other motivated, accomplished people involved in space exploration."

Richard Alena

TITLE: Project lead for intelligent mobile technologies

EMPLOYER: NASA Ames Research Center, Computational Sciences Division, Moffett Field, Calif.

WHAT HE DOES: In response to astronaut "wish lists," Alena sets up and tests the wireless network technology for use on the space shuttle and the international space station. With his help, crew members can e-mail one another, mission control and their friends and families during flight.

GREATEST CHALLENGE: Making things work at zero gravity. NASA uses a combination of tools, including IBM ThinkPads, Hewlett-Packard Co. OmniBooks, Norand Mobile Systems and HP personal digital assistants (PDA) and Proxim Inc. radio frequency technology. "Frequency-hopping packet radio communication works very well inside the modules," he says, but astronauts still have to be able to enter data in a microgravity environment. "They prefer to just float around with the devices strapped to their knees." Alena is working on providing the astronauts with PDA-based real-time chat and video communications.

GREATEST REWARD: "Camaraderie with

all the other motivated, accomplished people involved in space exploration."

MEMORABLE MOMENTS: In 1995, he traveled to Moscow to test portable equipment for use aboard the *Mir* space station and worked closely with the Russian crew. "They practically worked for nothing and were extremely dedicated," he says. "The more I found out about what they did with *Mir*, the more impressed about it I was. It will be sad to see it go." Alena also works closely with astronaut John Grunsfeld to define onboard computing technology for the international space station.

HOW HE GOT THE JOB: Alena responded to an ad in the *San Francisco Chronicle* in 1992. "NASA was looking for a computer scientist to work on their portable computer project," he says. Previously, he was a product development manager at Imatron Inc., a San Francisco company that develops high-performance computed tomography scanners.

ADVICE TO JOB-SEEKERS: "Stay in school and get your engineering or computer science degree," he says. Alena wannabes should also check NASA's job listings and internship programs at www.nasajobs.nasa.gov.

Fryer is a freelance writer in Santa Cruz, Calif.

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Corporate Barter

BY JACQUELINE EMIGH

BARTER CARRIES the dual distinction of being both the earliest sort of trade known to humanity and one of the hottest new types of transactions to hit the Internet. Today, an increasing number of companies and individuals are bartering goods and services both on and off the Web, without the use of money.

Corporate barter (a term specific to business-to-business trade) has been commonplace for decades. Some practitioners say barter gives them a better deal by securing the equivalent of list prices for goods and services they can produce for much less. Certainly, if a company has overestimated demand for its product and faces excess inventory as a result, barter provides better payback than alternatives like liquidation. New or unused goods that are put up for barter usually consist of either manufacturing overruns or discontinued models. To clear warehouse space, many companies liquidate these kinds of goods, even though the products are top quality.

Corporate barter has traditionally been limited mainly to new or unused items. Now, though, companies are sometimes disposing of used goods over the Web, either on auction sites such as eBay Inc. or some new barter sites.

Information technology staff can help improve a company's overall bottom line by putting used IT equipment like computer hardware and software up for barter. "The trade can be used almost anywhere in the corporation," says Steven White, CEO of Utrade.com, one of a new crop of online transaction-oriented bartering organizations now emerging on the Web.

Used IT equipment is sometimes bartered when one company buys another or when a company decides to upgrade its IT systems or close or relocate a branch office. By bartering, a company can get some-

DEFINITION

Barter refers to exchanging goods or services without money. People can barter either indirectly, by using a shared or "common" medium of exchange such as trade credits, or directly, through an even trade of computers for cars, for example.

thing useful in return for these used IT goods — either for the IT organization, another department or the company as a whole — without necessarily shelling out a dime. One company with this objective in mind has listed 10 "used but in good working condition" Pitney Bowes Inc. D964 copy machines in the catalog of Fort Lauderdale, Fla.-based Euro Barter Business USA (EBB), another barter exchange organization. And eBay recently listed mainframes and AS/400 machines. "Those certainly must be used machines," says Rick Guarino, North American vice president of operations at New York-based corporate barter exchange Atwood Richards Inc.

The asking price for the copy machines is \$60,000 in trade dollars. With the trade dollars received for the machines, the company can choose from countless other items available for barter in EBB's print and Web-based catalogs, such as \$40,000 in hotel accommodation certificates in Germany or \$27,000 worth of baseball caps with the firm's logo on them.

Corporate barter can also save money by reducing a company's inventory storage needs. "If you can't get your inventory out the door, you're just not efficient," points out William Vieira Vroman, senior director of marketing at San Francisco-based BarterTrust.com, another new online bartering exchange.

Other advantages include the chance to minimize losses from perishable goods, boost export business and cut corporate purchasing costs for such

items as airfares, hotel stays and advertising.

"Chief financial officers are usually the ones who arrange for corporate barter. But IT can help by developing new ways of tracking barter transactions," Vroman suggests. Utrade.com has added a line item to its customized in-house accounting software that tracks its own barter transactions, says White.

In industry as a whole, Vroman sees a need for corporations to better track barter credits with IT tools such as enterprise resource planning and manufacturing resource planning systems.

International Barter Corp. (IBC), a barter organization based in Seattle, estimates that 250,000 businesses today are involved in bartering, including 65% of the Fortune 500 companies. Among them are PepsiCo Inc., Pizza Hut Inc., Casio Computer Co., General Electric Co., Caterpillar Inc., 3M Co., Hilton Hotels Corp., The Goodyear

Tire & Rubber

Co., Xerox Corp. and DaimlerChrysler AG.

In the market for new computer equipment? Manufacturers of computer parts have been more likely than computer makers to participate in barter exchanges. One key reason is the reluctance of computer makers to compete with existing market channels. It has also been somewhat easier for manufacturers to predict demand for computers than for components because of longer product life cycles, Vroman says. "Manufacturers have been more likely to overestimate demand for [components like] disk drives or CPUs," he says.

But many corporate barter exchanges are willing to work with corporations to distribute merchandise in ways that won't adversely affect existing channels. Sometimes bartered goods are distributed in countries where particular channels

aren't active, for example. Meanwhile, as product life cycles on computers continue to shorten and cost-cutting pressures mount, corporate bartering looks like an increasingly bright solution for all kinds of IT equipment, experts say.

In one recent deal, according to Guarino, IBM de Mexico needed to clear out \$1.7 million in unsold PC inventory, including ValuePoint and PS/2 models, to make room for new Aptiva models. The IBM subsidiary decided to trade the PCs through Atwood Richards. Half of the IBM PCs were obtained by an Atwood Richards client in Mexico and the other half by a client in the U.S., according to Guarino.

It can be tougher for IT within large enterprises to get involved with barter, experts say. Smaller companies tend to be more flexible and more amenable to setting up new distribution channels. In large enterprises, distribution programs tend to be bigger and more complex.

Bartering has also drawn the eye — and money — of venture capitalists. Two firms — Vector Capital and El Dorado Ventures, both in Menlo Park, Calif. — have entered the online bartering ring by supplying start-up funds for BarterTrust. BarterTrust has purchased three brick-and-mortar barter exchanges as well: Barter Network, BarterCorp and Barter Business Network.

As BarterTrust's Vroman views it, the Internet will help maximize the efficiencies of barter economics by letting companies rely on barter as a regular channel. "If I have 4% extra manufacturing capacity, I'll then know that I can produce 4% more," he says. And with the use of tracking technologies, companies might also be able to get an even better grip on exactly where the goods they've bartered are going and how the trade dollars earned are being spent. ■

Emigh is a freelance writer in Boston.

If Not Money, Then What?

A few mediums of exchange through the ages:

MEANS OF BARTER

1 Furs

2 Unknown goods, possibly axes, hoes

3 Cigarettes

4 Atwood Richards trade dollars

USED BY

The Pilgrims, to finance their Mayflower voyage in 1620

Peter Minuit, in 1626, to buy what is now Manhattan from the Lenapes tribe

Germans during and just after World War I

IBM de Mexico, in a recent exchange of PCs for Volkswagen cars, TV advertising and trucking and express mail services

MISSION: When Bank of America invested in new technology, they knew success required that people could use it. But how? Traditional training was too slow; hiring new employees too expensive. Lockheed Martin's solution: a business-smart process called reskilling. It uses real projects to teach new skills, guided by experienced coaches.

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JOE AUER/DRIVING THE DEAL

Lengthen contracts for purchasing power

CONSOLIDATING purchasing volume to leverage your negotiating power is a basic procurement practice. The rule is that bigger is better — because putting lots of money on the table gets more attention from a vendor and provides it with an incentive to grant more favorable pricing and contract terms. But there's a corollary that buyers often forget: If you add time to the contract, you can increase volume and your purchasing power. Here's a story about one large company that did just that.

The company in question was renegotiating a software license deal. The customer wanted a tiered pricing schedule based on past and future volume. The vendor was pressing for a larger dollar commitment in return for a better deal and wasn't stepping up to the customer's desired discount structure without it.

The customer procurement team re-examined the software and how it fit the overall corporate strategic direction. The team determined it would be the preferred solution for at least five more years, in any event.

Armed with this information, the team decided to make a five-year deal instead of a three-year deal. By adding time, the customer increased its deal size and related purchasing power without assuming any additional risk. (It needed the software for that long anyway.)

Furthermore, the customer conditionally offered to purchase more licenses up front and proposed keeping the already installed product base under maintenance for five years if the supplier would do an even better deal. (Maintenance fees for the up-front

purchase would begin to accrue only as the software was actually deployed.)

In response, the vendor made concessions. It offered a 50% discount on the up-front purchase and reduced the maintenance fee from 20% to 15% of the license fee on the installed base and any future purchases.

In addition, the vendor froze the maintenance fee on the installed base for five years, instituted the tiered discount structure for future purchases the customer wanted and warranted that the product would be maintained and supported

for at least five more years. The customer agreed.

The key here was the customer increasing its purchasing power by lengthening the time of the deal and increasing the up-front purchase. When all the numbers came in, the customer saved almost \$200,000 over five years, not to mention the inevitable license fee increases the vendor would surely have imposed during the next five years.

dor that tried to hold up the auto manufacturer, I wonder if the vendor hadn't been ground up in the Big Three purchasing game.

"Even though Inaki Lopez is gone, the Big Three have an only-game-in-town attitude toward their vendors, often changing the rules in mid-contract and daring the vendor to take the business elsewhere.

"In your research into the story, was the auto manufacturer completely blameless? Or was the vendor merely retaliating for prior abuse? There is this attitude that says, 'It's OK if I play hardball, but it's not fair if the other guy does.'"

Actually, this automaker isn't one of the Big Three and isn't located in Michigan.

It's a prominent offshore manufacturer. This particular situation seems to be just a run-of-the-mill, day-to-day attempt by the vendor to maximize its profits at the expense of a dependent customer. All of us are targets for this. But, Brian, your thoughts are shared by many. ■



JOE AUER is president of International Computer Negotiations Inc. (www.dobetterdeals.com), a Winter Park, Fla., consultancy that educates users on high-tech procurement. ICN sponsors Caucus, the association of high-tech acquisition professionals. Contact him at joea@dobetterdeals.com.

Mailbag

Brian Cook at Ameritech Corp. read my column about an automaker being held hostage by a software vendor [Advice, July 5]. In the interest of fair and balanced journalism, I thought it was worth sharing. (By the way, the resolution to that hostage situation will appear soon.)

Brian e-mailed: "I'm an old hand in the IT game and, as a Michigan resident, a student of the auto business as well. Reading your column in the July 5 *Computerworld*, in which you mention the software ven-

BRIEFS

Blue Cross Outsources

Blue Cross/Blue Shield of Massachusetts has signed a seven-year, \$350 million information technology services contract with Electronic Data Systems Corp. in Plano, Texas. EDS will help the insurer develop new information services and improve service to the health plan's 1.7 million members. The agreement extends a 30-year relationship between the companies.

Speech Reservations

United Air Lines Inc. has deployed new speech-recognition technology that officials said provides customers with faster access to flight information through its toll-free telephone number. The system is based on speech-activated technology developed by SpeechWorks In-

ternational Inc., a Boston-based provider of conversational speech-recognition technology. Callers using the new system don't have to know a flight number but instead can simply say the origin and destination cities and approximate arrival time to obtain the status of a flight, according to United.

Expense Automation

American Eagle Outfitters Inc., a Warrendale, Pa.-based retailer of casual clothing, has purchased Expense Express from Pleasanton, Calif.-based InterPro Expense Systems Inc. to automate its travel and expense reporting. The system will be deployed to more than 1,000 of the retailer's employees, starting with the 200 who travel most often. American Eagle operates 445 stores in 44 states.

Call Center Overhaul

Eircell, Ireland's largest mobile phone operator, has hired Chicago-based eLoyalty to overhaul its call center technology and processes. In the recently completed first phase of the project, the company installed eLoyalty's Loyalty Cockpit interface system for Eircell's customer service agents at its Dublin headquarters. In other phases of the project, the company will introduce outbound calling services and sales automation designed to let agents cross-sell products.

Chamber of E-Commerce?

The U.S. Chamber of Commerce has announced that it plans to launch a for-profit Web site that links small businesses with information, news and buying services. To be launched in December, www.chamberbiz.com will provide the Chamber of Com-

merce's 3 million business members with public policy updates; access to e-mail, chat rooms and bulletin boards; industry news; and products and services, officials said.

It's being funded by Raj Singh, president of Telcom Ventures, an Alexandria, Va.-based venture capital firm that will invest up to \$24 million in the project. The site plans to make money by selling advertising and making joint marketing deals, officials said.

Multimedia Acquisition

Macromedia Inc. has announced its intention to acquire Andromedia Inc. in a deal that would allow the combined firms to offer integrated products for content management, personalization and analysis of corporate Internet, intranet and extranet sites, San Francisco-based Macromedia said. Andromedia, also in San Francisco, makes marketing software for e-commerce operations.

Migration Delays

A migration to several Sabre Inc. systems for travel automation has caused myriad flight delays and cancellations at Argentine airlines Aerolineas Argentinas and Austral, a spokeswoman for Fort Worth, Texas-based Sabre acknowledged last week. AMR Corp., the parent company of American Airlines Inc. and Sabre, owns part of Aerolineas Argentinas and Austral, which are in the process of merging. The Sabre systems are intended not only to handle reservations but also to manage a variety of operational issues related to flights.

Customer Analysis

Garden.com Inc., an Austin, Texas-based online provider of gardening-related products and services, will use Austin-based Knowledge Discovery One Inc.'s Retail Discovery Suite to analyze its customers' purchasing behavior.

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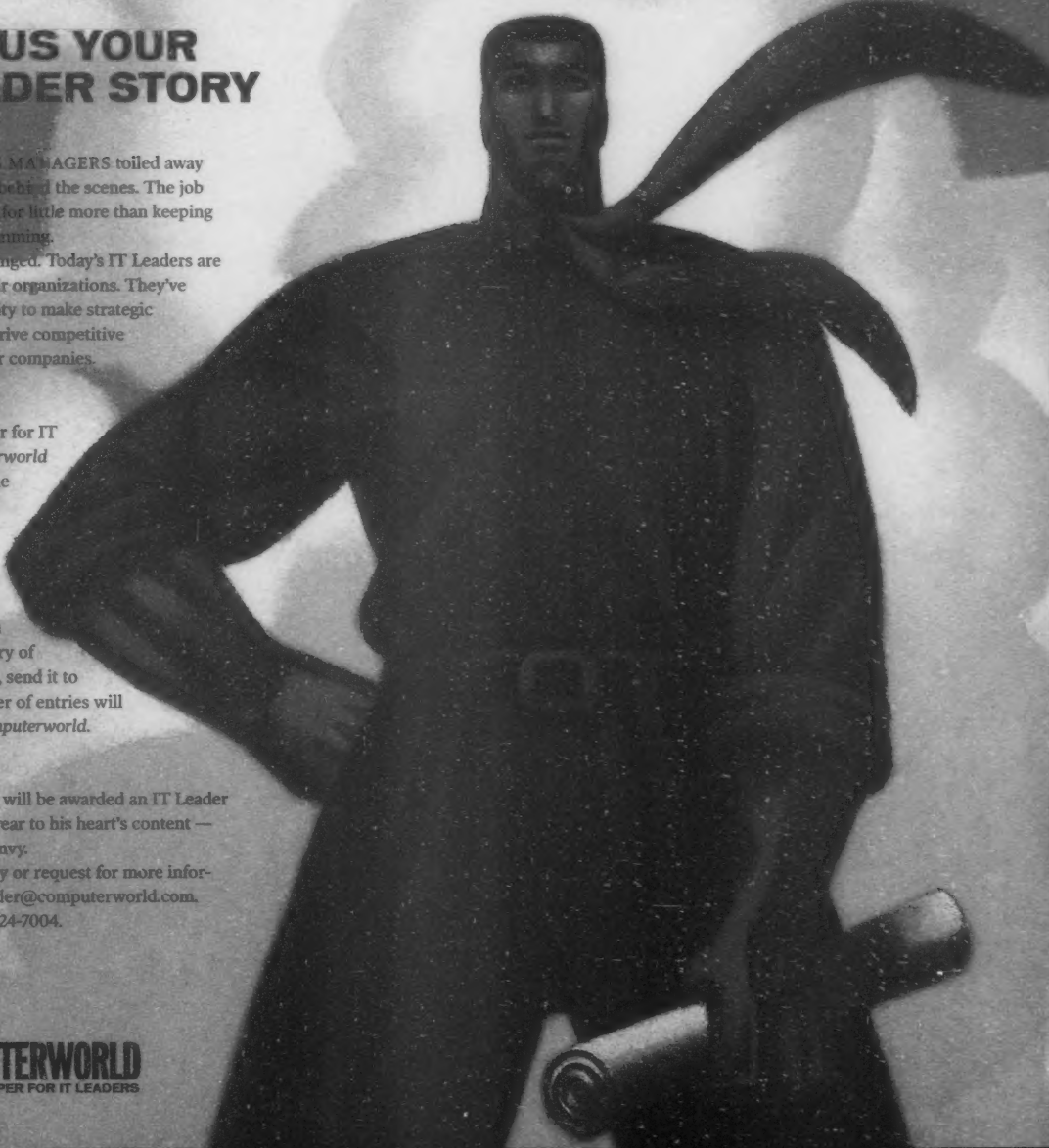
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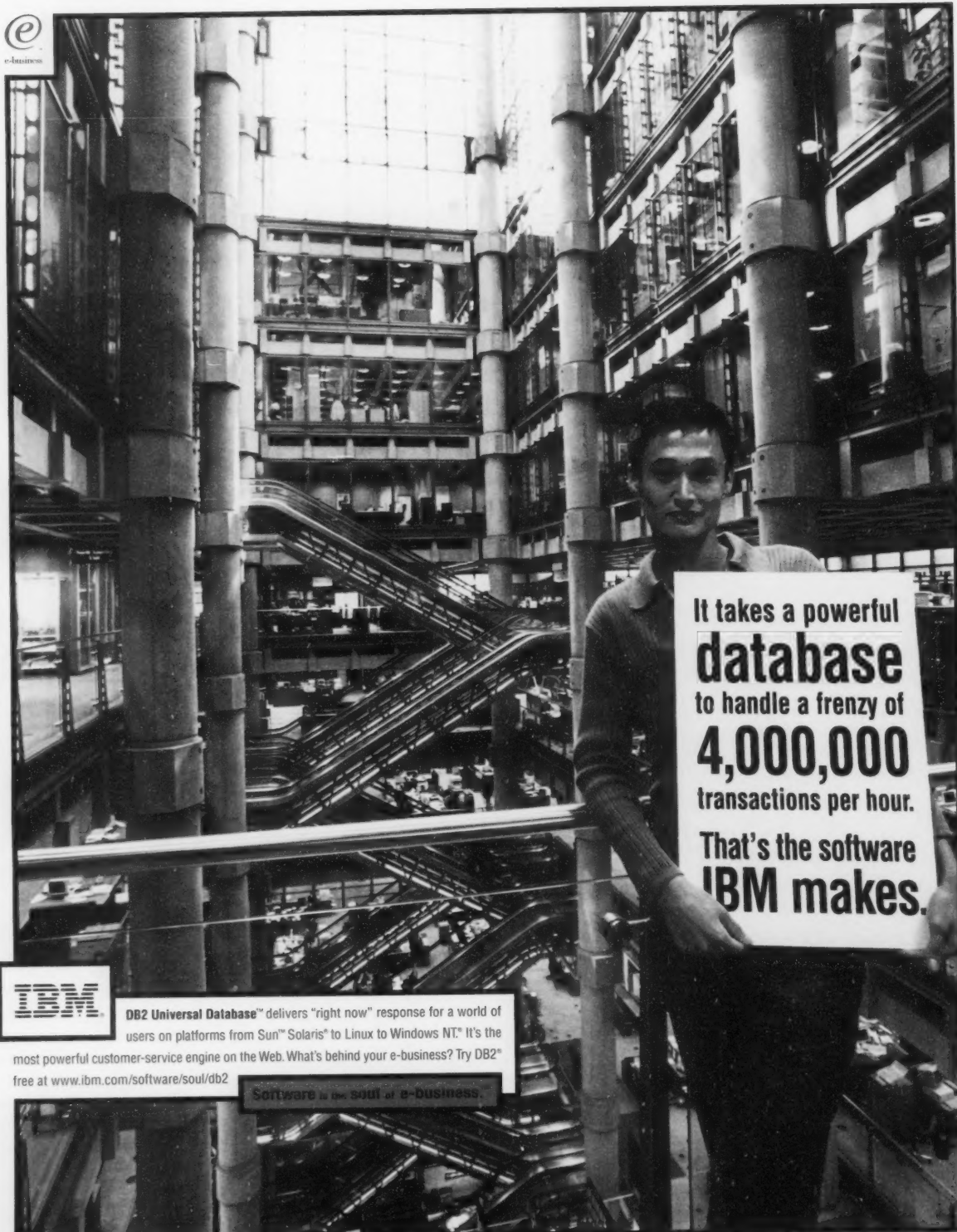
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TECHNOLOGY

WHEN ASPs ARE THE RIGHT CHOICE

Conventional wisdom is that application service providers are only for small or midsize companies. Wrong. We found that they can be a good choice even for large companies that are short on staff or expertise in a specific application. **► 74**

PEOPLE PORTAL

In what could be the first portal of its kind, the Department of Defense is creating a research tool that could ultimately be accessible to 16 million people. At the same time, it will create an up-to-date, evolving map of their skills. **► 62**

IS LOCK-IN OVER?

Users report that they can use various flavors of Linux more or less interchangeably, especially in the single-purpose server appliances where Linux is often found. The result: less reliance on any one vendor. **► 62**

PCs FOR HIRE

PC vendor Micron Electronics Inc. says it will invest \$210 million next year in a new business model, in which it will lease services and equipment to customers on a monthly basis. It's targeted at small and midsize businesses — and that's just as well, says one IT manager. **► 64**

CYBERGROCERS

Technology evaluations editor Cynthia Morgan finds that Streamline.com is more trouble than

it's worth. The problem isn't the site's user interface or its speed, but the worry over whether the delivery person will bring her Cap'n Crunch on time. **► 65**

BANDWIDTH HAUNTS SITE

The *Blair Witch* phenomenon prompts Artisan Entertainment to beef up its Web site to meet the demand of up to 9 million hits per day. **► 65**

BREACH PLUGGED

Microsoft and a privacy advocacy group say the vendor has fixed a flaw in its Hotmail messaging software. **► 67**

STORAGE GOODIES

We check out five storage options, including Iomega's Clik, Lexar's CompactFlash, IBM's Microdrive and Sony's Memory Stick. **► 70**

FLASHBACK

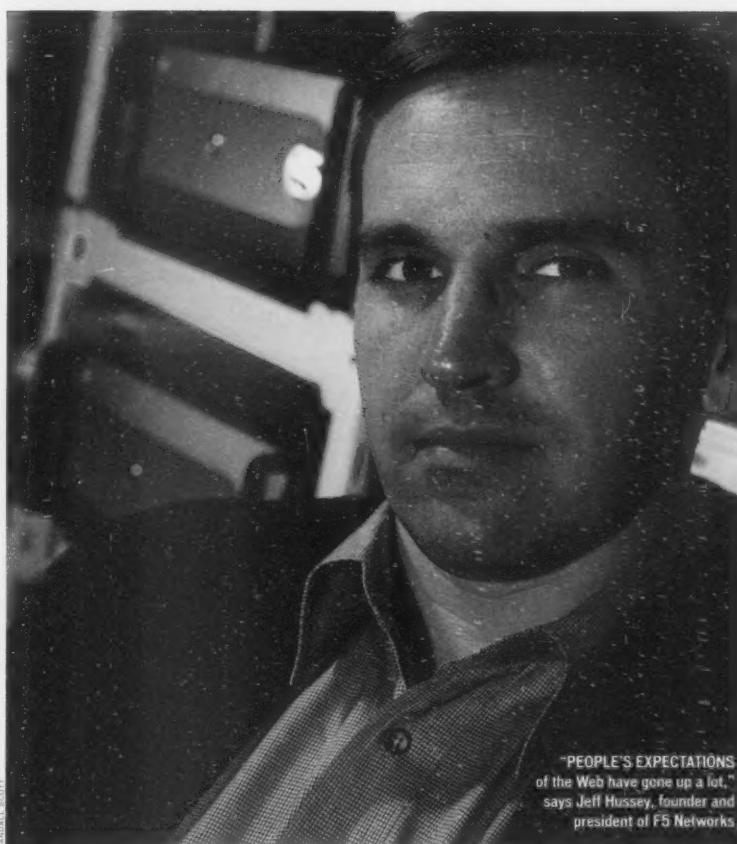
In 1991, Linux, which started out as a student's hobby, began its rise to its position as one of the world's fastest-growing operating systems. **► 78**

QUICKSTUDY

All Internet service providers offer access to the Web. But there's a huge difference in speed and reliability among Tier 1, 2 and 3 providers. We describe the differences and tell you what to look for based on your corporate needs. **► 72**

MORE

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"PEOPLE'S EXPECTATIONS of the Web have gone up a lot," says Jeff Hussey, founder and president of F5 Networks.

BATTLING THE WORLD WIDE WAIT

FOR MOST CORPORATIONS, fast Internet access isn't a luxury, it's a necessity. F5 Networks Inc. aims to deliver, with products that act like traffic cops for data as they route requests to the most available server. But the company faces competition as other vendors bundle such capabilities into their products.

68

DOD Portal Designed To Map Workers' Skills

Pentagon hopes to use personal profiles to help managers build project teams fast

BY DOMINIQUE DECKMYN

THE DEPARTMENT of Defense (DOD) is building a portal that could ultimately be accessible to 16 million people. Its dual goals are to provide workers with a research tool and to create an up-to-date, evolving map of their skills.

Though it's not unusual to build a portal that lets users access information, the DOD portal is one of the first that will attempt to automatically build an inventory of users' skills in specific areas. "We're killing two birds with the same stone," said George Hellstern, chief of the technical task force for Y2K at the DOD.

In early summer, the DOD set out to create a database that listed employee skills related to solving the Y2K problem in DOD computers. That idea soon expanded to include a database of all skills inside the department and, eventually, among affiliated civilian agencies and defense contractors.

The key problem so far has been getting people to fill in and maintain a detailed form that lists their experience and interests, Hellstern said.

Combination Tool

Hellstern said he hopes technology from San Francisco-based Autonomy Inc. will provide the answer. It combines an expertise-mapping tool with an information portal.

If all goes well, the portal will give users the incentive to spend about 30 minutes telling the system about their interests, Hellstern said. This information will be used to provide them with customized news feeds from more than 500 sources on the Internet. Users will be able to search the information with a natural language interface.

But the software will also create a profile of every user.

The resulting skills database will be combined with an existing Sybase database that contains basic information about workers' experience and training, resulting in "a really rich view of what your human resources are for a specific project," said Tom Maddock, group manager at Vienna, Va.-

based CMS Information Services Inc., which helped implement the project.

Managers will receive a tool called the Knowledge Visualizer, an optional add-on to the Autonomy package. The tool creates a visual map of available expertise in a certain domain, which should help managers quickly pull together a team to address a specific problem.

The system is expected to go live within the next few weeks.

It will have taken approximately four months to set up at a cost of \$250,000 for the hardware, software and contractors. The Autonomy software is running on two Sun Microsystems Inc. Enterprise 250 servers, while the Web pages are served up by two dual processor Pentium III servers running Microsoft Corp.'s Windows NT and Internet Information Server. This setup will support 250,000 simultaneous users.

The Pentagon looked at portal software from other vendors, including Excalibur Technologies Corp. in Vienna, Va., and Dataware Technologies Inc. in Cambridge, Mass., but found that they would have required much more manual work in categorizing incoming news feeds, said Maddock. Autonomy has acquired a strong reputation for its technology and has recently repackaged its software as Portal-in-a-Box, with prices starting at \$100,000.

"While there's a large amount of information that's stored in documents, there is even more that is stored in heads," said Carl Frappalo, co-founder of The Delphi Group, a Boston-based research and consulting firm. ■

Too Many Linuxes? No Way, Say Users

BY DAVID ORENSTEIN

To users and analysts, the myriad Linux distributions are like penguins, the Linux mascot: The various species have different plumage, but under the feathers, they all walk like penguins.

Rather than being disappointed with a lack of breakthrough innovations, though, users say the technological differences among Linux distributions is a blessing. As long as the distributions are interchangeable, corporate users remain independent of their vendors.

Vendors can help users with

support or consulting, but they can't hurt users by locking them in or forcing them to upgrade. That's especially true when Linux is used in network appliances, which are used for only one specialized purpose. In such cases, the basic tools available with every Linux variant are all that are needed.

"If Red Hat [Software Inc.] were to fall off the face of the earth, it wouldn't stop us from going forward," said Jeff Davis, senior systems programmer at Amerada Hess Corp. in Houston, which uses a massively parallel Linux cluster to render 3-D images of the seabed for oil

exploration. Red Hat just happened to be the Linux distribution that information technology workers at Hess were most familiar with, he said. In addition, its name recognition made it an easier sell to management than other Linux variants.

At the San Francisco architecture firm of Gensler Inc., information systems Vice President Bruce Bartolf said he chose Red Hat because it has the greatest support from third-party software developers.

Although commercial competition has been intensifying this year, Linux vendors remain constrained from diverging technologically because they worry that forking, as Unix has, would confuse or divide users, said analyst Stacey Quandt at Giga Information Group Inc. in Cambridge, Mass.

Meanwhile, one of the few mandates of Linux's General Public License is that changes to the operating system itself must be made freely available to everyone else, meaning vendors must share anything that would give them a competitive advantage.

Lester Hightower, vice president of advanced open systems at ABC-NAC Rail Systems Group, said the choice of Linux doesn't matter on the server, because servers will run "a kernel, basic tools ...

and then specific services such as sendmail, Apache or an RDBMS," he said.

At the railway signal system maker in Jacksonville, Fla., Hightower has swapped Walnut Creek CD-Rom Inc.'s SlackWare distribution out for Red Hat without much trouble and downloaded kernel updates from the Linux community rather than waiting for Red Hat.

It's going too far to say that the Linuxes are identical under the hood (see chart). Users with a need for multilingual Linux, for example, can look west, to Nuremberg, Germany-based SuSE Inc.'s longtime support of European users, or east, to Brisbane, Calif.-based TurboLinux Inc.'s support for Asian languages.

Orem, Utah-based Caldera System Inc.'s OpenLinux 2.3 has important and unique features that made it a good choice for hotelier Candant Corp. in New York, said technical lead Damon Covey.

One example is that OpenLinux is self-hosting, meaning the binary files and their accompanying source code match exactly. In some other distributions, source files require different libraries and interfaces. OpenLinux allowed Candant to recompile files, such as drivers, with predictable and consistent results. ■

Many Faces of Linux

Technological differences among the various Linux distributions are minor, but each distribution has at least something to make it distinct from the others:

DISTRIBUTOR	DISTINCTION
Red Hat	High market share; big support emphasis; special e-commerce version
Caldera	Easy Windows-based installation; source and binaries match
Dobian	Automatic online updates; detailed packaged descriptions
Corel	Emphasis on desktop usability; integration with productivity applications
Mandrake	Optimized for Pentiums; widespread availability
Suse	Strong in Europe
TurboLinux	Strong in Asia; high-end clustering support

MOREONLINE

For Computerworld coverage of Linux and related Web pages, visit our Web site.
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BRIEFS**Sub-\$500 HP PC**

Hewlett-Packard Co. announced plans to launch a \$499 Brio PC aimed at small and midsize businesses. HP claims that the new system, called the Brio BA200, will be the first branded business PC from a top-tier computer maker priced at less than \$500. The system is due to be available Nov. 1, HP said.

Unisys Server Sets Record

Unisys Corp.'s Aquanta ES5085R eight-processor server achieved the fastest online transaction processing (OLTP) performance ever recorded for an Intel-based symmetric multiprocessing server, according to the Blue Bell, Pa., company. The server reached 40,670.05 transactions per minute in the test, which was conducted using the Transaction Processing Council's "C" methodology, the industry's standard measure of OLTP performance.

Amdahl Alliance

Amdahl Corp. signed an agreement to resell Network Appliance Inc.'s NetApp F700 file servers. Under the agreement, Amdahl will offer infrastructure services tailored to each customer who buys the Network Appliance F700 series. The F700 series allows customers to share data between Unix and Windows NT platforms and offers backup and disaster recovery protection.

Both companies are in Sunnyvale, Calif.

Skinny Chips

Motorola Inc. and Infineon Technologies AG, the former semiconductor subsidiary of Siemens AG, have shipped their first chips manufactured on 300mm (12-in.) wafers. The Semiconductor 300 joint venture, in Dresden, Germany, has begun producing 64M-bit dynamic RAM based on the new wafers, the companies said in a statement. The 300mm wafers allow production of two and a half times more chips per wafer and promise to reduce production costs on next-generation 256M- and 1G-bit DRAM by up to 30% over today's 200mm technology, according to information on Semiconductor 300's Web site.

Compute by Subscription?

Micron's new model bundles hardware and Web services

BY COMPUTERWORLD STAFF
AND WIRE REPORTS

MICRON Electronics Inc.'s move into so-called subscription computing is aimed at small and medium-size businesses. And according to one information technology manager, that's where it should stay.

In a statement last week, Mi-

cron said it plans to invest \$210 million next year in the new computing model, in which it will lease services and products on a monthly basis.

For a monthly fee, Micron will offer services such as Web hosting and e-commerce, Internet access and management of hardware and desktops. Customers can also adjust which services they want to subscribe to each month and can sign up for one-, two- or three-year hardware upgrades.

Subscription computing prevents companies from getting locked into products or services that could soon become

obsolete, the company said.

Among the services Micron will offer are NetNow, a subscription service that provides access to the Internet and lets customers set up Web sites and e-commerce capabilities.

Another offer, NetNow Connect, will give users an appliance server that provides e-mail, remote Web hosting, Internet access and connectivity via digital subscriber line technology, as well as technical support for hardware.

Micron boosted its ability to carry out Web hosting in August with the purchase of Net-Limited Inc., an Internet content and applications hosting provider in Los Angeles that operates under the name HostPro.

Would such a service — bundled PC client and server hardware, along with Web services — work for departments or workgroups within larger companies?

Wayne Hastings, assistant to the vice president at Detroit Edison Co.'s Power Generation division, is skeptical. "I don't see the big-business benefit, but small businesses, which don't have an IT team, might want to take advantage of it," he said.

That's because of the business importance of e-commerce. "It's a critical system, and if we were going to go that way, we'd buy it. You buy the systems that are critical to you — at least we do," Hastings noted.

Support is also a big issue for larger companies.

"Micron is probably going to contract support from somebody. That's just another layer removed from the source, in our view," Hastings said. "I don't know how they're going to size the system so my customers are always going to be taken care of."

A FASTER, SHARPER CLIO



Vadem Inc. in San Jose has introduced the Jupiter-class Clio C-1050, an enhanced version of its Clio C-1000. New features include a faster processor, a 56K bit/sec. modem, wireless access, improved screen performance and 32M bytes of RAM. The Clio C-1000 had 16M bytes of memory and a 33.6K bit/sec. modem. Available now, the C-1050 costs \$999 and includes Microsoft Windows Handheld PC Professional Edition Version 3.01.

The Blair Witch Web Project

*If the site fails,
no one can
hear the screams*

BY MATHEW SCHWARTZ

WHAT'S scarier than *The Blair Witch Project*, a recent movie about three student filmmakers being chased through the woods of Maryland by a 250-year-old witch with a penchant for fresh human teeth?

For Leo Collins, whose company, Artisan Entertainment Inc. in Santa Monica, Calif., distributes the film, it was making sure that the *Blair Witch* Web site didn't crash under the load of up to 9 million hits per day.

"The *Blair Witch* thing was a hoot," said Collins, Artisan's CIO. "We had an NT server with many different Web sites — all of our theatrical productions are on it — and when

Blair Witch really started to take off, we were quickly in a position where it was inadequate." Artisan built a complex of four Windows NT servers on a 100M bit/sec. connection, but by early July — one week before the movie opened — the multimedia-rich site was slowing down. Collins needed someone to help keep the Web site running.

Blair Witch 101

Back up. In case you've been living under a rock, *The Blair Witch Project* was one of the biggest movies of the summer, even measured against such competition as *Star Wars: Episode I: The Phantom Menace*. It was a low-budget, grainy, fictional documentary purportedly constructed from footage "found" after three filmmakers disappeared in the woods. No one expected it to gross \$140 million to date.

Part of the film's success was due to an intense Internet and print marketing campaign that made the multimedia-rich Web



FRIGHTENED BY THE PROSPECT of overload after 9 millions hits per day slowed Artisan Entertainment's *Blair Witch Project* site, the company turned to Akamai Technologies for help

site at www.blairwitch.com the primary focal point. Before the movie even premiered, additional "found" footage was being added to the site weekly, building the *Blair Witch* mythology and then bolstering it following the release.

But 180M bytes of media — images, sound effects, audio interviews, Shockwave anima-

tion and QuickTime movies — came at a price: It ate a lot of bandwidth. So Collins did some research and selected Cambridge, Mass.-based Akamai Technologies Inc. to help. Collins runs an Akamai program that rewrites some HTML code that calls multimedia content, directing it instead to Akamai servers, where

the content is cached for faster retrieval.

Now when a user accesses the *Blair Witch Project* Web site, hosted by Exodus Communications Inc. in Irvine, Calif., the site serves the HTML while one of Akamai's servers — whichever is closest to the user or can get to the user quickest, given current Internet traffic conditions — handles all of the multimedia.

Massive Overkill?

"At first, when we started talking to Akamai, I felt that this would be massive overkill, given the other steps that we'd done, but it turned out to be absolutely necessary," said Collins.

Akamai charges Artisan based on overall content served, so the cost scales with fluctuating demand.

"Now we're getting 1.5 million hits per day," said Collins, "and demand has been climbing again," which he attributes to the upcoming video and DVD releases of *Blair Witch*. Since Akamai handled 71M bit/sec. for Artisan at peak demand, Collins can sleep soundly at night. ■

CYNTHIA MORGAN/COMMENTARY

Streamlined — NOT!

THE STREAMLINE.COM technician rifled efficiently through my kitchen cupboards, scanning their contents into her portable computer. I felt at once exhilarated — the future of Web commerce was standing in my pantry — and exposed; did I really want anyone to know I buy Cap'n Crunch?

Well, as far as Streamline.com is concerned, my secret cereal preferences are safe. The company, which lets you order groceries and many other services via the Web, just wasn't up to giving me errand-free Saturdays. And they've made me ask a painful question: Will the reach of online technology exceed our off-line grasp?

Streamline.com's advanced personalization services try to duplicate our long-lost relationship with the corner grocer, who un-

derstood your anti-kale stance and delivered spinach instead. An electronic stroll through my refrigerator let Streamline.com tailor shopping lists and discounts to my personal tastes. Supposedly, Streamline.com would learn more about me every time I ordered. Kitchen supplies, video rentals and dry cleaning would be delivered to the Streamline.com-supplied refrigerator and shelving in my garage every week.

I can't remember ever be-

ing this excited about groceries. Or this disappointed when the service turned out to be more trouble than it was worth. Three weeks after Streamline.com invaded my cupboards, I ended the relationship.

Despite its intimate knowledge of my kitchen, Streamline had one problem after another that kept it from delivering, including personnel shortages, mistagging laundry, transformer explosions, scheduling mishaps and failing refrigeration that decimated my Häagen Dazs supply.

There's a lesson here: We're building fabulous Web personalization technologies. But a new class of service up front means we need a whole new class of support systems out back. A

corner grocer or even a big chain selling to neighborhoods is quite different from a global business that delivers individual products and services to every customer's home. And frankly, many of today's businesses, dot.com or not, just aren't up to that challenge.

I was willing to pay Streamline \$30 per month and higher product prices for convenience. But it was faster, cheaper and a lot less aggravating to run the errands myself.

Scalability isn't just a buzzword on the Web — as eBay, ETrade and many others have discovered — and it isn't only about servers and databases. It's also about process and supply chain. If you can reach 65 million customers, you'd better be

able to deliver to 65 million customers on time. Can you?

This back-end distribution chain is a far nastier problem than bandwidth, Java performance or any of the usual buzzwords. Supply-

chain management, customer care and inventory control are nowhere near as glamorous as Web personalization, but forget trying to run a business without them.

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CYNTHIA MORGAN is *Computerworld's* technology evaluations editor. Contact her at cynthia.morgan@computerworld.com.

your distribution chains, from supplier problems to angry customers that demand help now. We're especially interested if you've come up with a great way to relieve them, but maybe we can help suggest solutions if you haven't. Let us know. ■



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ICOM Informatics
Exchange House, 494 Midsummer Bld.
Central Milton Keynes MK9 2EA
Tel : 44 (0) 1908 677616
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<http://www.icominfo.com>

GERMANY
ICOM Informatics
Stefan-George-Ring 29
D-81929 München
Tel : 49 (0) 89 930 861 50
Fax : 49 (0) 89 930 5184
<http://www.icominfo.com>

USA
ICOM Informatics
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Report Says Microsoft Fixed Hotmail Glitch

BY ANN HARRISON

Microsoft Corp. and Truste, a Cupertino, Calif.-based non-profit privacy advocacy group,

announced earlier this month that an investigation they commissioned found that Microsoft has effectively corrected

the software flaw that accounted for the Hotmail security breach this summer.

The Aug. 10 breach allowed

anyone to type in a user name and a fake password to access approximately 40 million user accounts.

According to a statement released by Microsoft and Truste, the "independent" report was

conducted by an unnamed "Big Five accounting firm."

Dave Steer, a Truste spokesman, said the findings and the identity of the company were concealed according to guidelines set by an auditing industry group.

But Jason Catlett, president of Junkbusters, a Green Brook, Md.-based privacy advocacy firm, fired off an open letter

It's totally disingenuous to claim that they couldn't have had an open audit.

JASON CATLETT, PRESIDENT,
JUNKBUSTERS

to Microsoft Executive Vice President and Chief Operating Officer Robert Herbold condemning the audit. "It's totally disingenuous to claim that they couldn't have had an open audit," said Catlett.

Although the software bug exposed users' accounts for 65 hours, Steer characterized Microsoft's actions as "extremely responsive."

The auditors interviewed Hotmail staff, reviewed the solution at the code level and tested scenarios used for access to Hotmail accounts. Steer said the corrective measures complied with Truste's privacy guidelines, allowing Microsoft to display the Truste privacy seal on its Hotmail Web site.

Richard Purcell, Microsoft's director of data policies and practices, said the report confirmed that responses to the breach "were reasonable and sufficient" and prompted the company to conduct more thorough testing. "Those testing cycles included processes by which the software would not be exposed over a weekend period in the way it was this time," said Purcell.

Although Microsoft helps finance Truste, Steer said the organization maintains its autonomy by financing operations with privacy seal licenses and not depending on any one sponsor. ■

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Balancing Act Proves Profitable for Start-Up

F5 Network's globally distributed PC servers balance large Web server loads

BY AMY HELEN JOHNSON

DOUG SHUCK, executive director of online systems at publisher Encyclopaedia Britannica Inc., says he likes Seattle-based F5 Networks Inc.'s BIG/ip load-balancing capabilities and the wide-area fail-over protection of the company's 3DNS product for one simple reason: "If my customers never have trouble getting to my site, my job just got easier."

Encyclopaedia Britannica, headquartered in Chicago, shifted most of its business from print to electronic media in 1994. Today, all the information from *aardvark* to *zymosan* can be found on the company's two main online products: the Britannica.com Web site and Britannica Online, a subscription service.

Supporting these services is a computer infrastructure that consists of distributed servers in Sunnyvale, Calif., Herndon, Va., and Chicago, with additional servers in the U.K. and Australia.

F5's BIG/ip and 3DNS make sure that visitors hit the least-crowded server, because they are automatically shifted to a healthy server if any machine develops problems.

Overcoming Obstacles

Since the debut of the new network in February, Encyclopaedia Britannica has experienced hardware and network failures, but it hasn't mattered, says Shuck, because the customers were never aware of any problems.

But the installation wasn't perfectly smooth. Shuck says it was a challenge to get BIG/ip and 3DNS to work in concert through a firewall. 3DNS sits outside the firewall, and BIG/IP sits inside it. F5 had to write special code to get them to talk to each other, Shuck says.

Mark Hoover, president of Acuitive Inc., an analyst firm based in Wilmington, Del., says the kind of load balancing F5 promises has a number of hot benefits, including the following:

■ **Cost:** Clustering cheap PCs

is a better value proposition than investing in one expensive high-speed server.

■ **Platform independence:** F5 products enable clustering of heterogeneous machines; information technology managers have options.

They can pick the best platform for the job — a legacy server, the monthly special or the fastest machines available.

■ **Network dispersion:** Servers

can reside anywhere in the world. This lets IT managers take advantage of locality and time zones and avoid risking everything in a localized disaster.

■ **Scalability:** IT managers can easily add servers when demand increases.

Jeff Hussey, founder and president of F5 Networks, says that his customers are starting to understand the benefits of dispersed, clustered Internet environments such as the ones Shuck and Hoover describe.

In the past, customers came to F5 after a disaster. Today, says Hussey, they're more proactive and want to ensure that their networks stay up and provide good performance before they learn the lesson the hard way. "People's expectations of the Web have gone up a lot," he explains.

Not Alone

F5 isn't the only company that wants to fulfill those expectations. The company is facing a large competitive threat from networking behemoth Cisco Systems Inc., says Peter Christy, an analyst at Internet Research Group Inc. in Palo Alto, Calif.

Cisco and other router and switch vendors are putting load-balancing capabilities in to their network hardware, undercutting F5 in the basic load-balancing market.

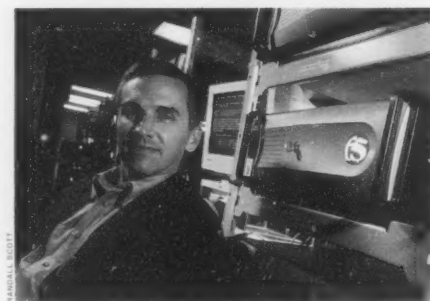
"The basic function of traffic management will continue to migrate into lower and lower-priced products," says Christy. "In a couple of years, the \$20 Ethernet hub will have basic load balancing in there in the chips."

F5 is countering this threat by licensing its basic load-balancing software in original equipment manufacturing deals with switch makers like Alcatel SA, Extreme Networks Inc. and Cabletron Systems Inc., says Hussey.

Hoover says he thinks that's a smart move on the part of Hussey and F5's management.

"They're fast-moving. They listen to customers," Hoover says. "When the smoke settles and there are only three or four vendors left in this space, one of them will be F5 for sure."

Johnson is a technology and business writer in Seattle.



JEFF HUSSEY, F5 Networks CEO: "One customer told me 'we can do things at 4 p.m. that we used to have to do at 4 a.m.'"

F5 Networks Inc.

Location: 200 First Ave. West, Suite 500, Seattle 98119

Telephone: (206) 505-0800

Web site: www.f5.com

Technology: Web-site load balancing

Why it's worth watching: Lets IT managers cluster heterogeneous PCs; improves performance without requiring new hardware.

Company officers:

• Jeff Hussey, founder, president, CEO and chairman

Milestones:

• 1996: Company founded
• July 1997: First product released
• June 1999: Initial public offering

Employees: 178; growing at a rate of 143% per year

Burn money: Venture funding from Britannia Holdings Ltd., Cypress Partners Limited Partnership, Encompass Group Inc., Menlo Ventures, Alexander Hutton

Capital LLC.

Products: BIG/ip, 3DNS, see/IT

Customers: Encyclopaedia Britannica Inc. in Chicago; eToys Inc. in Santa Monica, Calif.; *USA Today* in Arlington, Va.; Big 20.com in Minneapolis

Partners: Extreme Networks Inc. in Santa Clara, Calif.; Cabletron Systems Inc. in Rochester, N.H.; and Packet Engines, now part of Alcatel Internetworking Inc. in Plano, Texas

Red flags for IT:

• Some switches and software now sport load-balancing capabilities; who will buy a separate box to duplicate the task?
• Analysts predict the market will be limited — about \$1 billion in 2001. With 20 companies, someone's bound to lose.
• Cisco might decide to muscle in to the market.

[the buzz]
STATE OF
THE MARKET

Tough Act To Follow

Mark Hoover, president of Wilmington, Del.-based analyst firm Acuitive Inc., says if you include all firewalls and routers with any kind of load-balancing features, F5 has about 40 competitors. But only a handful matter.

Local Director and Distributed Director

Cisco Systems Inc.
San Jose
www.cisco.com

"They don't have the best product, but they're a marketing giant," Hoover says. Cisco sells the most load-balancing devices, with about 40% of the market. But Cisco's dominance in this segment is due more to its strength as a router company than technical prowess.

When a company wants to implement load balancing within its infrastructure, it's easy to turn to a trusted company that supplies a lot of network hardware.

Those willing to invest in a separate load-balancing device, says Hoover, find F5 offers better performance than Cisco and offers features that Cisco lacks, such as the ability to mine cookie data for information about what the user wants to do, letting F5 make a better load-balancing decision.

Ace Director

Alteon 700 series
Alteon Websystems Inc.
San Jose

www.alteon.com

Ace Director is an eight-port Fast Ethernet switch that does Layer 2 switching and routing, with server load balancing added on top. Like F5, managers can use it to balance both local and global applications. Alteon has an advantage over F5 in price and performance, says Hoover, but F5 surpasses it in features. With roots in Gigabit Ethernet, Alteon can handle very large server loads.

Web Server Director

RADware
Mahwah, N.J.
www.radware.com

RADware offers a pure load-balancing approach, says Hoover, which makes its products more comparable to F5's than those from other vendors. RADware's twist is: It's not a PC platform, but a router platform with load-balancing software. RADware's strength, says Hoover, is in nonserver load balancing — Web components like firewalls and caches.

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of perfectionists,
add some anal
retention and top it
all off with a pinch
of obsessive
compulsion and
you've pretty much
got our inspection
department.



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New Spin on Removable Storage

BY HOWARD MILLMAN

LOOKING TO EXTEND the storage capacity of your laptop computer, digital camera or personal digital assistant? Instead of a logical and limited selection of removable and portable storage products, prepare yourself to pick through a confusing array of conflicting products and vendors' promises.

As a mere mortal who's trying to get some work done without becoming an expert in removable storage options, you will need to sort through a dizzying — and mostly incompatible — array of devices and standards. You have the option of acquiring solid-state devices, such as Lexar Media's CompactFlash (CF), Peripheral Enhancements' SmartMedia (SM) and Sony's Memory Stick. Or you can opt for diminutive products like Iomega's 40M-byte credit-card-size Klik drive and IBM's 2-sq.-in. 340M-byte microdrive. All can be used to store various forms of data such as text and graphics and music.

Gerry Purdy, an analyst at Mobile Insights Inc., recommends basing your extended storage purchasing decisions on the type of data to be stored. "CompactFlash will become the standard for storing images in digital cameras and data in

handheld devices," Purdy says, "whereas [IBM and Iomega] drives are really designed for corporate markets. To back up smaller amounts of information or to exchange it with a co-worker, Iomega's Klik is ideal. For mission-critical data backups and exchanges in a corporation, I think the IBM drive will prevail."

IBM positions its \$500 microdrive as a peripheral for use in top-of-the-line, high-resolution digital cameras. Currently, the only retail sources for the 340M-byte drives are camera stores.

Aside from capacity levels, there are other differences between Klik and IBM's microdrive. For example, the \$200 Klik offers 40M-byte replacement disks that cost about \$10 each. Using one-third of the \$300 price differential to purchase 10 Klik disks eliminates the capacity gap between Klik and the microdrive. On the

other hand, one IBM microdrive holds nine times as much data as a Klik drive — a convenience and a time-saver when backing up a data-laden laptop.

CompactFlash and SmartMedia, the two most popular solid-state memory types, further complicate the purchasing decision. The primary appeal of these featherweight and ultracompact devices is the elimination of moving parts and the likelihood they will last longer than other products, especially in rough service.

The major differences between these two memory types are capacity and size. CompactFlash's maximum capacity is 160M bytes; SmartMedia's is 32M bytes. Both are about the size of an oversize postage stamp (1- by 1.25-in.), but CF is about three times thicker than the ultrathin SM card. CF generally costs slightly less per megabyte — about \$3.50 vs. \$4, with street prices about 20% less. Unlike the earlier forms of solid-state memory that re-

quired batteries, the data stored in CF and SM modules will stay intact for years with refreshing.

CF is the market leader, but that could change depending on Sony's success persuading other manufacturers to adopt its slick, but proprietary, Memory Stick. About the size and shape of a stick of gum, Memory Stick is available in 8M-, 16M- and 32M-byte models. A 64M-byte model is due next month, and a 256M-byte model is planned.

Designed for use with both PCs and a variety of cameras and recorders, the Memory Stick's tiny size makes it as easy to use and carry as CF and

SONY'S MEMORY STICK was designed for use with various PCs and cameras



CLIK IS IDEAL for backing up or sharing small amounts of information, says one analyst

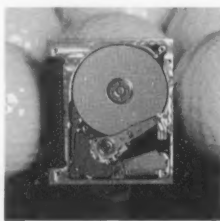
Klik

Iomega Corp.
www.iomega.com/klik
40M bytes
\$199
Additional removable disks,
\$10 each
Benefits: Unlimited storage using
removable disks
Limitations: Limited storage per disk

CompactFlash

Lexar Media Inc.
www.lexarmedia.com
340M bytes
80M bytes
\$299
Benefits: No moving parts,
shock-resistant
Limitations: High cost per megabyte

Microdrive



IBM
www.storage.com
340M bytes
\$499.95
Benefits: Large capacity, lowest
cost per megabyte
Limitations: Not expandable, high
initial cost

SmartMedia

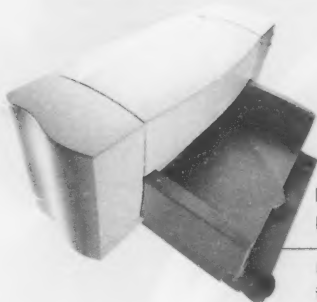
Peripheral Enhancements Corp.
www.peripheral.com
32M bytes
\$125
Benefits: No moving parts,
shock-resistant
Limitations: Limited storage
capacity, high cost per megabyte

Memory Stick

Sony Electronics Inc.
www.sony.com
64M bytes
\$190
Benefits: Small solid-state form
factor, slightly lower cost per
megabyte than CF and SM
Limitations: Proprietary

Millman operates Data System Service Group LLC, a vendor-independent networking, problem-solving and systems engineering consultancy in Croton, N.Y. Reach him at (914) 271-6883 or hmillman@ibm.net

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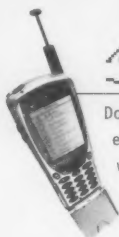
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Rating: 1 2 3 4 5 6 7 8 9 10 best

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Internet Service Providers

BY PATRICK THIBODEAU

AT A BASIC LEVEL, all Internet service providers offer the same thing: They make it possible for users to exchange e-mail and surf the Web. But there is a pecking order among service providers that can have implications for the speed and reliability of your company's Internet connection.

Because of the competition and range of choices, price usually isn't the top reason why a company chooses a particular service provider, according to George Peabody, an analyst at Aberdeen Group Inc. in Boston. Decisions usually are based more on a provider's quality of service, reliability and customer support levels, he said.

The Internet is largely a collection of such providers linking a vast number of computer networks. There may be as many as 8,000 Internet providers operating in the U.S.

At the top of the food chain are so-called Tier 1 providers. These are companies that operate the very high-speed fiber-optic lines, called backbones, that ultimately tie the Internet together. Tier 1 providers, including Cable & Wireless USA in Vienna, Va., AT&T Corp. in New York and MCI WorldCom Inc.'s UUNet unit, can transfer data as fast as 2.5G bit/sec.

Tier 2

Tier 2 providers connect to the backbone through Tier 1 providers and are typically national or large regional Internet providers. They may use connections up to about 50M bit/sec. to connect with the Tier 1 provider.

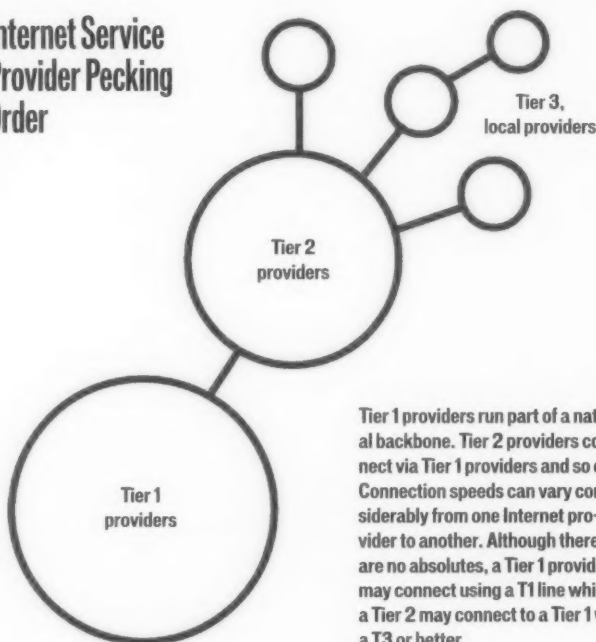
The chain of connections goes on from there. A Tier 3 provider is typically a local service provider with limited reach. There are even Tier 4 and Tier 5 providers, mostly mom-and-pop operations.

In choosing an Internet service provider, most medium-size to large companies want to

DEFINITION

Internet service providers link people and businesses to the Internet. Most Internet providers offer the same data delivery and sending services, but they can vary widely in terms of services and performance. Large providers that connect to national backbones have faster network connections and can deliver traffic through fewer router hops than local providers.

Internet Service Provider Pecking Order



Tier 1 providers run part of a national backbone. Tier 2 providers connect via Tier 1 providers and so on. Connection speeds can vary considerably from one Internet provider to another. Although there are no absolutes, a Tier 1 provider may connect using a T1 line while a Tier 2 may connect to a Tier 1 with a T3 or better.

be near a backbone to limit the number of other providers, or router hops, that their traffic must travel through. This reduces the chance that a company's Internet traffic will be delayed by network problems and bottlenecks. And the closer the provider is to the backbone, the more likely it is to have a faster connection. "You want your data to hit the national backbone as soon as

possible," says Peabody.

Other issues to consider include a service provider's ability to continue delivering services in the face of internal or external system and connection failures.

One of the strengths of the Internet is its ability to reroute traffic around failures. "But that's only possible if there are two ways to get to a given point," says John Quarterman,

president of Matrix Information and Directory Services, an Austin, Texas-based Internet consulting firm. Users need to determine whether a provider has more than one connection for routing traffic to the Internet, he says.

A service provider's internal systems redundancy — the backup systems that kick in if a server fails — also warrants user examination.

Web Sites About Internet Providers

Matrix Information and Directory Services' Web site has information about Internet usage and capacity at www.mids.org.

The Internet Society, a Reston, Va.-based Internet policy group, has posted a collection of papers detailing the history of the Internet at www.isoc.org/internet/history.

A short, informative history of Internet service providers can be found at the Web site of Herndon, Va.-based Commercial Internet Exchange Association at www.cix.org/letters/ltr_990108.html.

The Cyber-Geography Research Centre for Advanced Spatial Analysis at University College London provides an online atlas of cyberspace at www.cybergeography.com/atlas/atlas.html.

"The amount of redundancy will give you a clue as to whether they can actually maintain a service-level agreement," says Quarterman.

The service-level agreement between the provider and user company is critical. It sets standards for quality of service and support help, and it may also spell out service levels for remote offices. Web hosting can also be a key part of such an agreement.

For companies that use a virtual private network (VPN), a service that allows the creation of a virtual LAN, users will have to determine whether an Internet provider can deliver the bandwidth-intensive services needed to support a VPN, say analysts. Companies considering advanced services such as voice over IP (telephone calls across the Internet) should also be certain that their provider is prepared to support them. ■

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- Doug Smith,
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ASPs SPEAK THE CORPORATE LANGUAGE

**THINK APPLICATION SERVICE PROVIDERS DON'T BELONG
IN LARGE COMPANIES? THINK AGAIN BY CYNTHIA MORGAN**

Premiere Technologies Inc. gambled on do-it-yourself enterprise resource planning (ERP) deployment and nearly lost. An application service provider (ASP) took over the project and rescued Premiere from what could have been a costly — and embarrassing — mistake.

That's why Douglas B. Hadaway, vice president of finance at the Atlanta-based company, scoffs at the popular notion that large corporations have little use for ASPs. "That's ridiculous," he says, "We have PeopleSoft, and we have a happy user base. You know how hard that is to achieve?"

Premiere's experience isn't unique. Companies like Volvo AB, Monsanto Co., Fleetwood Enterprises Inc. and General Electric Co. are discovering that large corporations can make profitable use of an ASP model.

An ASP "rents" the use of an application, providing all aspects of deployment and maintenance and generally guarantee-

ing to provide trouble-free operation for the customer. It can be a convenient way for businesses to circumvent talent shortages in information technology, eliminate security headaches, resolve maintenance hassles and reduce deployment time for new applications.

"Using an application service provider can make sense for a large corporation, even though this is a relatively new idea for most of us," says Phillip K. Hargrove, vice president of IT at GE's Employers Reinsurance Corp. in Overland Park, Kan.

"No one's career is ever enhanced by owning the data center," agrees Richard Spradling, CIO at Fenton, Mo.-based Maritz Travel Co. "A C grade is about the best you can do. If we can find anyone who can manage a technology better than we can, we'll go to them with open arms. We've got many other things we can be doing."

Kathryn Kissam, corporate branding and identity director at Monsanto, which

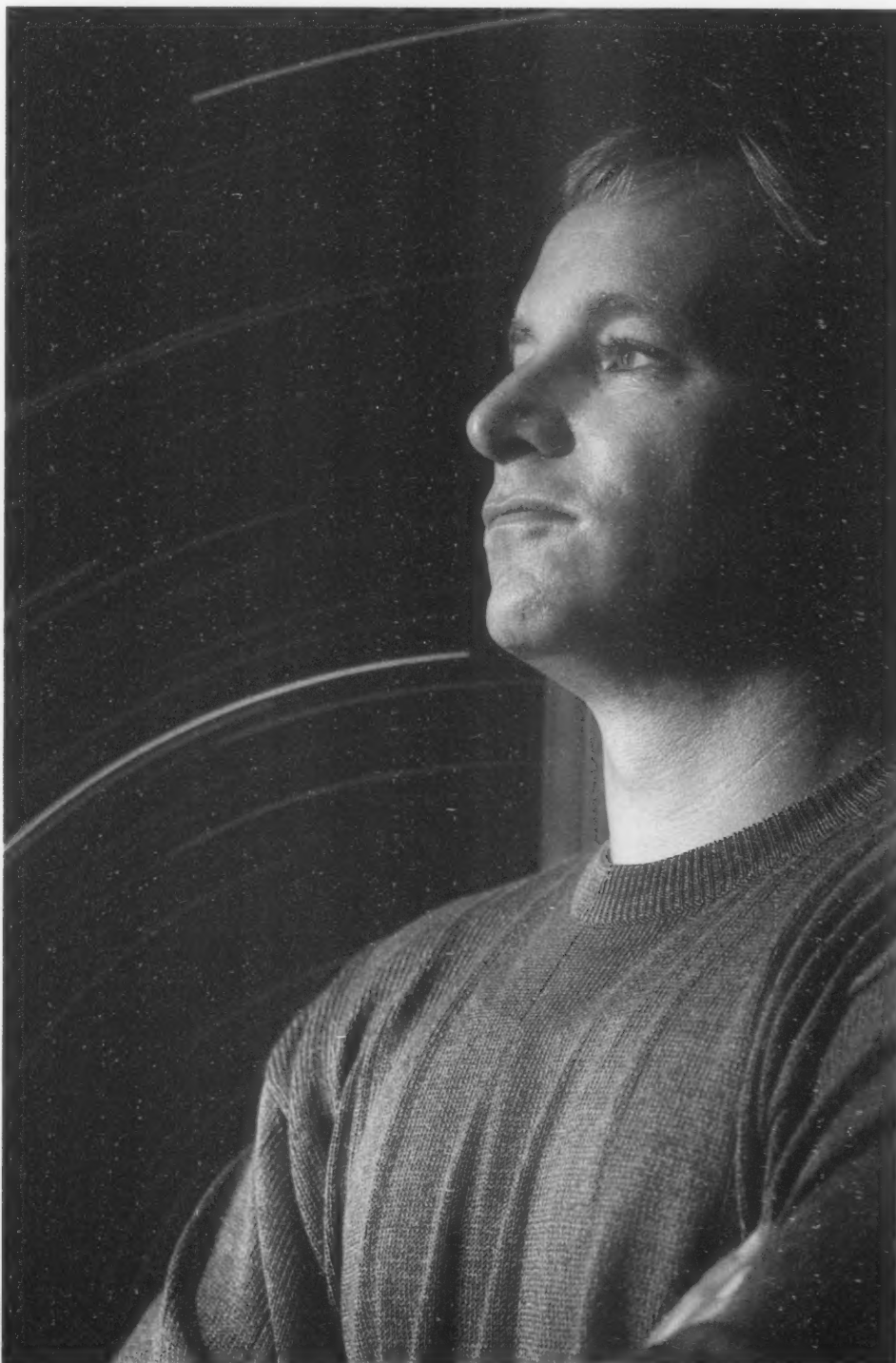
is using an ASP, put it even more strongly: "If [corporate use of ASPs] isn't the trend for most companies, I'd be very surprised."

Provide New Expertise

An ASP makes sense when the application requires expertise that the existing IT staff lacks. Jonathan Bulkeley, CEO of Barnesandnoble.com LLC, recently told a Fall Internet World audience that his company plans to outsource nearly all of its Web infrastructure. "We're not going to be in the server business," he predicted. "I want to run the interface, the content, the user experience. But I don't want to have to power it myself."

In Premiere's case, the fast-growing company needed to aim IT resources at maintaining the core business: supplying enhanced communications services in more than 30 countries. Using in-house IT staff to build, deploy and maintain an

Continued on page 76



It became painfully evident that ERP was not one of our core competencies.

If there was a crisis with revenue-producing technology, then — boom — focus shifted away from the ERP and onto the 'real' problem.

DOUGLAS B. HADAWAY,
VICE PRESIDENT OF FINANCE,
PREMIERE TECHNOLOGIES INC.

The reluctance to outsource private data storage will become a nonissue once people get used to the idea. You don't worry about your money because it's in virtual storage at the bank, right?

TRAVER GRUEN-KENNEDY,
CHAIRMAN,
ASP CONSORTIUM

extensive PeopleSoft Corp. ERP installation seemed a natural extension. "It became painfully evident that ERP was not one of our core competencies," says Hadaway. "If there was a crisis with revenue-producing technology, then — boom — focus shifted away from the ERP and on to the 'real' problem. When I walked in, we just had a server and the software. PeopleSoft problems were everywhere. Load a new app, and PeopleSoft crashed. Printers didn't work. Software died."

Last fall, Hadaway's team decided to outsource the PeopleSoft applications to ASP TransChannel LLC in Atlanta. "They came in to assess the situation, staff the help desk and produced exceptional results in almost no time," says Hadaway. PeopleSoft is all they do. So we sat down with them and said, 'Hey, why don't you guys buy the servers and take care of this for us?'"

The partnership has made Premiere an ERP poster child, Hadaway says. "We're in the top 1 percentile of Windows NT/Informix/PeopleSoft implementations. And we're saving about \$3 million over five years by giving the work to TransChannel."

Free Up IT Staff

In other cases, the IT staff is fully capable of building an application — once it has finished important core business tasks. Monsanto, for example, needed to consolidate its corporate branding throughout its worldwide branches and subsidiaries, but finding internal resources to build the necessary automation and accomplish that task was proving difficult.

"We were repositioning ourselves from a bunch of chemical companies to a single, integrated life sciences company," says Kissam. "Monsanto should be speaking with one voice; instead we had absolutely no consistency in packaging, promotional materials, logos and business cards. The worldwide diversity was amazing and something we had to fix quickly."

Everyone agreed that a centralized library of corporate logos and images was important for Monsanto, but it took a backseat to other projects. "We've been acquiring companies. We've been resolving Y2K

issues. Our business model is to concentrate on the business and look outside where you can," says Kissam.

So the company instead put out a request for proposals to build, own and manage its much-needed image repository, finally accepting a bid from Imation Corp., a 3M Co. spin-off in Oakdale, Minn., that

Imation gives all these new locations a central place to store and distribute everything, and we don't have to worry about adding them ourselves."

Like Monsanto, Premiere Technology acquires companies regularly and must integrate their technology and data with its own. "With TransChannel managing the ERP, I don't

giving them. "We needed a quick turnaround to deploy an application that could tell us about our Web site visitors," says Kris Narayanan, database marketing manager for the group. "Our internal resources simply couldn't acquire the hardware, acquire the solution, test and deploy it, then regularly maintain it in the limited time that we had."

Narayanan's team chose Personify Inc.'s Essentials Web marketing and analysis tools and asked the company to build a pilot. Personify wasn't an ASP, but its pilot worked so well, Volvo asked it to continue hosting the service "because they were well equipped and they'd proved they could do it better than we could," says Narayanan.

The arrangement has more than paid for itself. "The time turnaround to actually purchase the server, test it — all that was far more significant than what this kind of application actually costs. The Web moves at seven times the speed of light, so no one wanted to waste valuable time playing with hardware," says Narayanan. "We estimate that the whole process would have taken us four to six months to do in-house. It took less than two months with Personify doing the work."

Control a Scattered User Base

It's wise to go to your customer, but probably foolish to bring an IT staffer along for the ride. Fleetwood Retail Corp., the retail arm of mobile home maker Fleetwood Enterprises, learned that lesson when it zoomed from owning two mobile home stores to more than 200 in less than 18 months.

The company rarely has as many as 10 employees in each store, and store locations can

Corporate IT Interest in ASP Increases

What are your organization's plans for Web-based application hosting?

	RESPONSE
No plans to use	47%
Currently using application	22%
Considering using	14%
Decided against Web-based application services	9%
Plan to use within six months	5%
Plan to use within 12 months	3%
Currently in negotiations with Web-based ASP	1%

Base: From a Computerworld survey of 115 IT managers; percentages rounded up

builds storage media and image handling tools. The resulting image gallery, connected to Monsanto's corporate intranet, stores not only corporate logos and branding specifications, but also contains other digital assets such as commissioned artwork and photography that employees can freely reuse.

"Imation gave us what we needed when we needed it. We save money because we don't have to commission new images with every new project or distribute new logo updates to every office in the world," says Kissam.

Combine Data Resources

Hargrove says GE will certainly consider application hosting, especially on low-maintenance thin-client systems, when dealing with small branch offices. "We recently acquired a company that has a number of very small satellite offices. At most, there are three people in one of these offices, and we can't justify putting a lot of equipment and support into something that small."

In Kissam's case, Monsanto "has been on a real buying spree," she says. "We've purchased many small companies with their own brands and logos. Before, we would have had to spend a lot of time and money educating new employees and sending out CDs with the appropriate images. Now

have to worry about how — or whether — that's taken care of," says Hadaway.

Rapid Deployment

IT departments are increasingly pressed by users' need for speed, many managers say. John Byrne, vice president of distributed technology at Baltimore's Mercantile Bank, manages services and desktops for 179 locations and says an ASP can sometimes get users up to speed more quickly than overworked IT staffers. "The client base today is pretty sophisticated technically, so if you can't supply fast response and reliability, it's much harder to make excuses," he says.

Speed was of the essence when leaders in Volvo's Relationship/Interactive Marketing Group needed to leverage the information their Web site was

Where Do ASPs Fit In?

An ASP may make sense in a large corporation when:

- The application requires expertise the existing IT staff lacks
- The IT department has other, more pressing projects
- A neutral party is needed to merge and centralize services
- An application needs extremely rapid deployment
- Its users will be widely scattered
- Its users are outside the firewall

An ASP may not be cost-effective when:

- Necessary expertise is already in-house
- The ASP needs to be brought up to snuff on in-house or legacy apps
- Exporting data to an ASP could violate privacy laws
- Most users are centrally located and within the firewall

be so rural that "we've sometimes had to petition the public utilities commission just to get a phone line," chuckles Don Palmour, the company's vice president of technology. "Often, we're just happy to have a local [Internet service provider] that can get the store on the Internet at 28.8K bit/sec."

Keeping the home office up to speed on local business and passing critical updates to store employees can quickly become a problem under such circumstances, especially when several applications are needed to manage the process. Fleetwood chose to use the extensive remote replication capabilities of Lotus Domino to build these applications, but it still had to get them out to the stores, and then it had to keep them working.

Palmour's team asked Interliant Inc. not only to host the application, but also to maintain the equipment that runs it. The fact that Fleetwood still owns its own Domino licenses, Palmour points out, puts Interliant technically in the category of outsourcer, not ASP.

Palmour says the company has so far fielded some pretty sophisticated custom Domino applications without a hitch. "We've got no Domino administrators on staff at all. Being able to take this work outside dramatically reduced the amount of technical expertise we need to put that kind of capability at those outlets."

Outside the Firewall

An ASP may also be a good choice when a corporation must give outsiders access to confidential data. At Volvo, for example, "security became a major reason for asking Personify to host its application," says Narayanan.

"Our advertising agency in New York builds our Web site," Narayanan points out, "and we'd obviously like them to understand our Web site visitors. Here is all this nice Personify data that does exactly that. Other marketing partners also need this information. But every time you let outsiders inside your firewall, there's a danger of compromising confidential corporate information; that doesn't happen with the Personify arrangement. There's no potential for hackers because we're not permitting them into the enterprise."

Narayanan's group is planning a much larger ASP project, a sales lead management system that will have a much broader scope. Following the lead of parent Ford Motor Co., which has already turned to ASPs to outsource its sales lead system, Volvo will distribute the new rental application to auto dealerships across the U.S.

"We want to be able to distribute leads to our dealership community without crossing the firewall," Narayanan says. "You see, automotive salespeople aren't necessarily Volvo employees, so we don't want to risk losing confidential information. This is a perfect opportunity for using [an ASP]."

"Building such a broad distribution system forces you to take a great deal of care in choosing your provider," warns Narayanan. "There are more than 2,000 people around the country who need access [to the sales lead system], so we'll be a lot more careful about how we secure the server, about buying service agreements for the hardware, that sort of thing."

there's a marked tendency for non-IT personnel to drive the application rental decision. Narayanan and Kissam say that's especially true for departments that already outsource a large part of their functions. "Marketing departments typically use many outside partners with specialized expertise, so using [an ASP] is a natural extension of what we're already doing," says Narayanan.

Non-IT Takes Charge

In Premiere Technology's case, the chief financial officer is in charge of the ERP system. "In most companies, the CFO has to be at least a partner with the IT department," notes Hadaway. "IT is focused on what brings in money because we're a technology company. I took ownership of the problem because my predecessor bought it and someone had to make that investment pay off."

Narayanan agrees. "In a sense, the Web is making all of us technologists. These things are integral to your job; who knows what processes marketing needs better than market-

house," he says.

When Personify's pilot demonstration showed how much the company could do, "we fell into this hosting arrangement. They had the tools, the equipment and the expertise. It was a no-brainer to ask them to continue," he says.

Once the ASP model proves effective, corporations tend to seek other potential application hosting candidates. Narayanan's group has three active or planned ASP projects, for example. Fleetwood Retail had already turned to ERP hosting before it began the Interliant project; the firm's SAP accounting modules are hosted by Qwest Communications International Inc. in California.

But ASPs are clearly not for every corporate application. "For larger client/server applications linked to legacy systems, especially if there's a large number of users within the firewall, it's quite likely we'd opt for doing the work ourselves," says Narayanan.

And certain industries, such as health care, financial and personnel services, may have additional confidentiality laws that mandate keeping data on the premises. "I don't think we'd be on the bleeding edge of outsourcing our applications to ASPs, and that's because of government regulations," says Adam S. Fogelman, manager of network project services at the Information Technology Division of The Cleveland Clinic Foundation. "We have very strong patient confidentiality issues we have to deal with. If you outsource your applications and data, you're talking about turning over patient records to an ASP and trusting there won't be a problem. Right now, we can't even consider taking that risk."

That problem may be going away, says Traver Gruen-Kennedy, chairman of the ASP Consortium and director of advanced business development at Citrix Systems Inc. "The reluctance to outsource private data storage will become a nonissue once people get used to the idea," he says. "You don't worry about your money because it's in virtual storage at the bank, right?"

MORE THIS ISSUE

For more information about application service providers, see page 44.

Case Studies

PREMIERE TECHNOLOGIES INC.

Atlanta
IT leader: Douglas B. Hadaway, vice president of finance
Goal: Rescue a failing PeopleSoft project without compromising core business efforts.
Vendor: TransChannel LLC, Atlanta
Solution: Premiere turned the whole project over to the ASP to manage.
Result: "We're saving about \$3 million over five years by giving the work to TransChannel," Hadaway says.

MONSANTO CO.

Skokie, Ill.
IT leader: Kathryn Kissam, director of corporate branding and identity
Goal: Centralize Monsanto's vast, very distributed library of logos, images and branding specifications into a single library that employees can access worldwide - and do it quickly.
Vendor: Imation Corp., Oakdale, Minn.
Solution: Imation created and maintains the Monsanto Image Gallery, an application that lets any company intranet user search, sort and use Monsanto's logos and images.
Result: "We save money because we don't have to commission new images with every new project or distribute new logo updates to every office in the world," Kissam says.

VOLVO CARS OF AMERICA

Rockleigh, N.J.
IT leader: Kris Narayanan, database marketing manager, Relationship/Interactive Marketing Group
Goal: Develop a Web marketing analysis system that would allow Volvo to pinpoint car buyer preferences, build informed promotional campaigns and make better use of the Web site.
Vendor: Personify Inc., San Francisco
Solution: Turn responsibility over to the developer.
Result: "We estimate that the whole process would have taken us four to six months to do in-house. It took less than two months with Personify doing the work," Narayanan says.

FLEETWOOD RETAIL CORP.

Riverside, Calif.
IT leader: Don Palmour, vice president of technology
Goal: Deploy and manage an entire suite of Lotus Domino applications in Fleetwood's more than 200 mostly rural sales centers.
Vendor: Interliant Inc., Purchase, N.Y.
Solution: Fleetwood bought the Domino licenses but turned everything else over to Interliant, which centrally manages the entire suite. Everything - including tape backup - is done in the central offices.
Result: "This was the only way we could ramp up that quickly. There's no question we get better service than we could provide ourselves," Palmour says.
- Cynthia Morgan

Concerns About a Web-Based ASP

	RESPONSE
Security	96%
Reliability and stability of an ASP as a long-term partner	94%
Availability of applications or uptime	80%
Widely varying monthly fees based on usage	53%
Lack of customization of Web-hosted applications	43%
Other	10%

Base: From a Computerworld survey of 115 IT managers

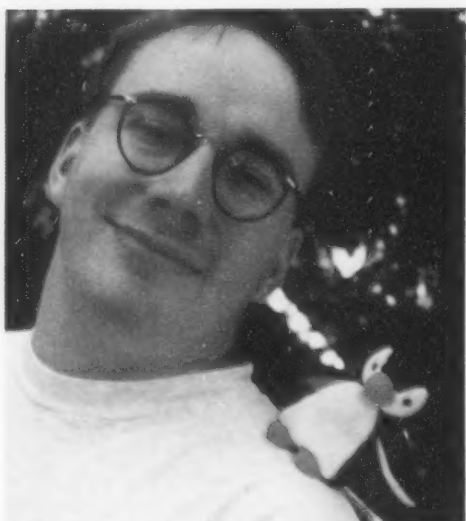
There are some significant differences in the way large corporations tend to use an ASP vs. the typical run-your-business-like-the-big-guys model of the small to medium-size business. It's less likely that an ASP would be supplying core business functions to a large corporation than it would to a small business, for example. "Volvo isn't a dot.com company, so something like Personify isn't a major part of our business, it enhances our business," says Narayanan.

But the technology purchased may be pivotal to the specific department that's buying it. In fact, ASP vendors say

ing?" he says. "The key IT resource of the future is people who can translate business needs into IT needs. Those people may not be within the IT department."

And the idea of application rental may not come from the software provider. In many cases, the situation simply evolves into an ASP relationship. Personify wasn't an ASP when Volvo signed up. Narayanan's team already had a satisfactory application rental going. "We'd chosen to outsource our marketing database because we required capabilities that would require considerable time and expense for our IT group to bring in-

Linus Launches Linux



WHILE A STUDENT at Finland's University of Helsinki, Linus Torvalds created Linux, one of the world's fastest-growing operating systems

BY MARY BRANDIEL

SOMETIMES, the most remarkable events in life are unintentional. Such is the case with Linux, which started out as a student's hobby but has quietly become in the past eight years one of the world's fastest-growing operating systems.

Linux was started in 1991 by Linus Torvalds, then a student at Finland's University of Helsinki. Since then, tens of thousands of volunteer coders have debugged, fixed and enhanced Linux.

But the story of Linux really begins in June 1979 at the Usenix meeting in Toronto, according to Peter Salus, editorial director at Specialized Systems Consultants Inc. in Seattle, which publishes *Linux Journal*. "The lawyer from

AT&T Corp. got up and announced the new pricing structure for AT&T Unix System V," Salus says. "The discounted educational fee was \$7,500, and the full commercial fee was \$40,000 per CPU. You can imagine what the feeling among the guys there was."

One of those guys was Andrew Tanenbaum, a professor at a university in Amsterdam. "He couldn't ask a free university to pay that kind of money, but he wanted his students to work with Unix," Salus says. So Tanenbaum wrote Minix, a small version of Unix that would run on a minimally configured desktop system.

Torvalds began using Minix

after becoming frustrated with getting computer time on the university's Digital Equipment Corp. MicroVAX. But while it was a great teaching tool, Minix really wasn't a fully functioning operating system.

It's what Torvalds did in response that, in Salus' eyes, was extraordinary. "He was interested in trying to see how an operating system worked by writing one, just as one would learn to ride a bicycle by falling off one," Salus says.

The result was a kernel that contained the basic Unix components — task-switching, a file system and device drivers. In other words, Linux Version 0.02.

Spreading the Word

Linux may have remained in that early state if it weren't for the Internet, because it was the Internet that got the word out so quickly. Soon after Torvalds mentioned his development to the Minix newsgroup, it was arranged that Linux would be available to anyone who wanted to download it, for free, over the Internet. Linux was licensed under the Free Software Foundation's General Public License, meaning that anyone could sell, copy and change the source code, as long as they allowed others to

do the same.

Since any programmer in the world can access the original source code, Linux has undergone more scrutiny and improvements than probably any other software in the world.

In 1994, Linux 1.0 was released as a full-fledged operating system that included the Linux kernel, net-

working support, hundreds of utility programs, development software and more. Today, Version 2.0 offers 64-bit processing, symmetric multiprocessing and advanced networking capabilities.

According to Dataquest, a market research firm in San Jose, the number of companies using Linux grew 27% in 1998, and a well-reasoned count of users is 7 million. In a recent survey of 788 large, small and medium-size organizations in the U.S. and Canada by International Data Corp. (IDC) in Framingham, Mass., 13% of respondents said they use Linux.

"Linux is emerging as a potential competitor to Windows and Unix for some server applications," says Dan Kusnetzky, program director for IDC's Operating Environments and Serverware research programs.

Major vendors like Oracle Corp. and Netscape Communications Corp. have announced their support, and commercial applications are on the increase. Vendors like Red Hat Software Inc. and Caldera Systems Inc. sell versions of Linux that include support.

Still in Charge

But no matter what activity swirls around Linux, the person in charge of the kernel is still, to this day, Linus Torvalds. Although he's got a "real job" at Transmeta Corp. in Santa Clara, Calif., he continues to devote a lot of time each day to Linux. "He's very devout about keeping that kernel as small and compact and utilitarian as possible and not putting in bells and whistles," Salus says. ▀

Brandiel is a frequent contributor to Computerworld. Contact her at marybrandiel@norfolk-county.com.

Technology Happenings

- **Cray Research Inc.** releases the Cray Y-MP C90, with 16 processors.
- **Microsoft Corp.** announces **Microsoft Visual Basic** for Windows at Windows World '91.
- **Paul Lindner and Mark P. McCall** from the University of Minnesota release **gopher**, a hierarchical Internet search system.
- **Philip Zimmermann** releases **Pretty Good Privacy**, a free Internet encryption tool.
- The **NSFnet** backbone is upgraded to T3 (44.736M bit/sec.). NSFnet traffic exceeds 1 trillion bytes per month.
- **Sun Microsystems Inc.** unveils the **Solaris 2** operating environment.
- **Apple Computer Inc.** releases its first generation of **PowerBooks**. The company announces its **QuickTime** software for integration of dynamic media for Macintosh computers.
- **Hewlett-Packard Co.** introduces the 95LX palmtop PC. It weighs 11 oz. and combines Lotus 1-2-3 software with advanced calculation features and data communications capabilities.
- There are **62,000,000** computers in use in the U.S. and **136,900,000** worldwide.
- **Sierra On-Line Inc.** announces **The Sierra Network**, a dial-up service for playing computer games with others.
- **Tandy Corp.** introduces its CDR-1000 CD-ROM drive for PCs, for the low cost of \$400.
- **Symantec Corp.** ships **Norton Desktop** for Windows.

Other Notables



■ **Best Picture:** *The Silence of the Lambs*

■ **Pulitzer Prize:** *Rabbit at Rest*, by John Updike

■ The Montreal Expos' **Dennis Martinez** pitches a perfect game against the Los Angeles Dodgers. The **Minnesota Twins** win the World Series, beating the Atlanta Braves.

■ Flashback is produced with the assistance of The Computer Museum History Center in Mountain View, Calif.

The UN Security Council announces a formal end to the Persian Gulf War.


The Warsaw Pact dissolves.

The Soviet Union breaks up after President Gorbachev's resignation; the Commonwealth of Independent States is formed.

JANUARY FEBRUARY MARCH APRIL MAY JUNE JULY AUGUST SEPTEMBER OCTOBER NOVEMBER DECEMBER

South Africa's parliament abolishes the last major apartheid law.

Anita Hill accuses Judge Clarence Thomas of sexual harassment; the U.S. Senate confirms Thomas for a Supreme Court position after stormy hearings.



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eOFFprice.com

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SkyAuction.com

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E*TRADE

Skills; Going Once, Going Twice, SOLD!
FreetimeJobs.com

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ArtGalleryLive.com

Business Meetings, Coming to a PC Near You
SeminarSource.com

Treasured Jewels from Around the World
Miadora.com

Investing in the New Millennium
WallStreetView.com

Save the Forest, Preserve the Future
Tangaloa Prime

Innovations in Custom Printing
easilest.com

The Future of Collaboration
Lotus

The New Shape of Communication
eCircles.com

Jobseeker's Supersite, One Stop Portal
Myjobsearch.com

Online Travel Solutions
Jumby Bay

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Northwest Passages

Seattle and Portland offer great recreation and software job opportunities. But salaries here can be on the low end, making this region a lifestyle choice
By Kim Fulcher Linkins

IF YOU'RE LOOKING to combine a love of the outdoors with an IT job, perhaps you've considered a move to the Pacific Northwest. If so, you'll be glad to hear that the region needs information technology professionals in a variety of industries, including software, biotechnology, electronics, medical equipment and environmental engineering.

But before you start packing for the journey, locals warn that the Pacific Northwest isn't likely to make you rich.

"An average salary is \$45,000 to \$55,000 per year" in Portland, Ore., says Greg Rotvik, a systems administrator at Sussman Shank LLP in Portland.

In Seattle, starting pay in network administration is approximately \$45,000, says John Thomas, director of business development at Computer Forensics Inc.

What the two areas do offer in abundance are lifestyle choices. Mostly, both cities attract people with a love for the great outdoors.

Seattle Quality of Life

Seattle is often thought of as the more cosmopolitan of the two cities and therefore tends to attract more single adults. Major cultural attractions include the Seattle Opera and

boating, fishing, golf, water sports, hiking, biking, mountain climbing and skiing.

The median sales price of existing single-family homes in 1997 was \$171,300 in Seattle, according to the National Board of Realtors. Median family income in 1998 was \$59,000, according to the regional office of the Department of Housing and Urban Development.

Work Culture

"Seattle's probably a little more laid back than a lot of places, as far as the dress code, as far as flextime approach," says Michael Redman, MIS director at Nicholson Manufacturing Co. "There's quite a few people who work various sundry hours and try to telecommute because the traffic is so terrible up here."

Some area companies offer job perks such as on-site dry cleaning, car washing, health clubs and even massages, as well as the more traditional perks such as stock options, 401(k) plans and health insurance. Still, most jobs place a very high demand on an individual's time, according to Thomas. This region is known for its large number of software companies.

"People who are in software development seem to immerse themselves in the development process, and that is their whole focus, their whole life," Thomas says.

Employment Opportunities

"Everything is moving toward more Web-enabled applications, so anyone who has Web development or support skills is definitely in demand," says Michael Stojanovich, technical recruiter at Starbucks Corp. in Seattle.

Seattle employers need systems and network engineers, database and network administrators, programmer/analysts,

help desk people and webmasters. Seattle companies also need people skilled in Visual C++, Visual Basic, Java, J++, Windows NT and SQL server administration. ▀

Portland Quality of Life

Portland provides a somewhat more homey feel, locals say, and tends to attract more families. The city is home to a symphony, ballet and opera, but the major draw is the outdoor activities, such as camping, fishing, hiking, river rafting, biking, skiing, wind surfing and kite flying.

"The culture here is somewhat health-oriented. We have the beach not that far away. But I think what's more of a draw is some of the areas like the walking trails," says Rotvik. "In the local Portland area, there's a network of trails that encompass several hundred miles at least of walking and hiking trails."

Portland tends to attract more of the outdoorsy type of person rather than those interested in symphonies and museums, Rotvik says.

"We're not culturally backward here, but it isn't a New York."

Work Culture

In Portland, employees seem to work hard and play hard. "I think there is less of a line here between your work and your home life, and it is more all-encompassing. I think a lot more of your identity might be tied up in [your job]," says Erik Sargent, lead Web developer at Providence Health Systems.

In order to keep up such a pace, IT professionals in Portland tend to take a little extra vacation time to relax, locals say. "I'd say everybody I know who works in high tech has

five or six weeks of vacation per year," says Sargent.

Employment Opportunities

Portland hiring managers foresee the Web as a driving force in the next few years, as well as "the general shifts to Windows NT that will probably happen, especially with Windows 2000," says Sargent. The area is also becoming home to more enterprise resource planning work, as companies install systems like SAP, says Meier.

IT professionals who develop legacy systems like AS/400 are currently in heavy demand, and that need probably won't be tapering off any time soon, says Stojanovich.



DOWNTOWN Portland and Mount Hood from Washington Park

"That is going to be around for the foreseeable future, so certainly at least in the five-to-10-year time frame, we don't see any changes there," he says.

Portland employers need people with PowerBuilder, Oracle Developer 2000 and Visual Basic skills, as well as administrators of Microsoft SQL Server or Oracle databases. ▀

Linkins is a freelance writer in Austin, Texas. She can be reached at kplinkins@aol.com.

Resources

For information on jobs and housing, try the following Web sites:
www.pdxchamber.org
The Portland Metropolitan Chamber of Commerce's home page offers information on businesses, as well as on residential relocation.
www.seattle.net
Maintained by Seinet Corp., this offers information on Seattle companies, climate and culture and includes the Seattle Relocation Guide.

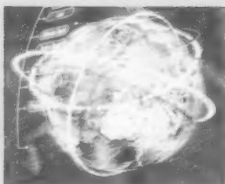


SAILING ON ELLIOTT BAY with the Seattle skyline in background

Seattle Symphony, the Pacific Northwest Ballet, art galleries and the Seattle Art Museum.

"The single most unique feature is that it is a very young culture," says Thomas. "Seattle is a young city. It's only 100 years old. Just from a physical standpoint, you don't have areas of the city that are old, brick row houses and things that people are used to looking at on the East Coast," he says.

Outdoor activities include



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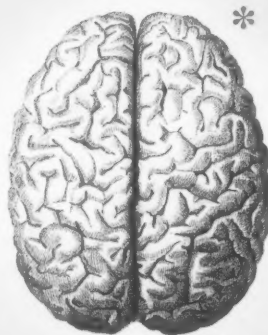
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Network Mgmt System Specialist Support I-NET (Solaris), 300-node fiber optic institutional Network in City, document, configure, script programs, troubleshoot. 6 yrs WAN or transport network support, HP OverView or other NMS software. Job 99ES678.

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SOFTWARE DEVELOPMENT ENGINEERS needed for design/development of systems architecture, network simulations and client/server software using C/C++, Visual C++ and network programming protocols on Windows, Windows NT and UNIX platforms. Masters required in Math, Computers, Engineering or any other related field of study plus 2 years experience. Must have proof of legal authority to work in the U.S. Salary \$55,000 for a 40 hour work week. Interested applicants contact the Oklahoma State Employment Service, 11654-A East 21st St., Tulsa, OK 74129 (I.D. #7209) Phone # (918) 437-4473. Refer to Job Order #387180. Ad paid by an Equal Opportunity Employer.

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Programmer Analyst - Oracle Applications Functional Specialist: Structured systems analysis, design, testing, quality assurance, implementation and integration of large volume, complex, integrated client-server based business, financial, banking, manufacturing and other commercial application systems in a multi-hardware/multi-software environment using centralized or distributed database systems using Oracle Relational Database Management Systems (RDBMS) and related software. Reengineering of business processes. Transition from legacy systems to RDBMS environment. End user training. Req: Bachelors degree in computer science/math/engineering/science/business-commerce; Proficiency required with one of the following Oracle Applications Suites - Oracle Manufacturing, Oracle Human Resources, Oracle Financials; and high mobility preferred. 40 hours per week; \$55,300 per year. Reply to: Mr. Greg Schweig, Mgr., Moss Valley Job Center, 345 Fifth Avenue, McKeesport, PA 15132. JO #9102391.

SR CDMA Technical Support Engineer: Provide technical customer hardware and software support for wireless and cellular telecommunication switch networks. Maintain and support software, resolve customer's technical software problems, and test new software before deployment at customer site. Troubleshoot problems regarding maintenance, translations, call processing, peripheral, and debug utilities. Act as primary contact to customer lab management, including lab scheduling, visitor registration, issue escalation, and resolution. 40 hrs/wk. \$68,794/yr. Requires Associates degree in Engineering, Engineering Technology or Electrical Engineering Technology and 4 years experience in the position offered or 4 years experience as a Telecommunications Engineer. Experience must include maintenance and technical support of wireless or cellular telecommunications networks. Applicants must have proof of legal authority to work in the U.S. Please apply in person with resume in hand to local Kansas City Service Career Center or send a job resume to: KS Department of Human Resources, #K23000021, Attn: Jane W. Burbridge, 401 SW Topeka Blvd., Topeka, KS 66603-3182.

Software Engineer (2 openings): Design, develop and implement software systems to determine feasibility of design and direct software testing procedures, programming and documentation using relational data base management systems (RDBMS). Work involves extensive travel and frequent relocation. Must have 1 year of experience in job offered or as a computer professional as well as 1 year exp: 1 from Group A and 2 from Group B OR 1 from A and 1 from B and 1 from C OR 1 from A and 2 from C. A) DB2, FoxPro, Informix, Ingres, MS-Access, Oracle, Paradox, Sybase and Unify. B) AIX, DOS, HP-UX, MVS, Novell, OS/2, Sun OS, UNIX, VAX/VMS, Windows, C) 4GL, APT, C, C++, COBOL, Case Tools, C Shell, Crystal Reports, E-SQL, Easytrieve, JAVA, ODBC, PowerBuilder, PowerDesigner, Power J, Power++, S-Designer, SQL, Shell Script, Visual Basic. Bachelors degree, or foreign equivalent, in Computer Sci/Eng, Chem, Math, or Physics or a scientific or business related field. Salary is \$65,000 per year; 40 hrs/wk. 9:00-5:00 p.m. Please submit resumes to: Ms. Charlene Cogley, Mgr., Beaver County Job Center, 2103 Ninth Avenue, Beaver Falls, PA 15010. Job Order No. 1028331.

Software Engineer: Design, develop and implement software systems to determine feasibility of design and direct software testing procedures, programming and documentation. Work involves extensive travel and frequent relocation. Must have one year of experience as a software engineer or computer professional and one year of experience using 1 of Group B and 1 of Group B and 1 of Group C, OR 1 of A and 2 of B, OR 1 of A and 2 of C as follows: Group A - Windows 3.1, Windows NT, Windows 95, Windows 98, Unix, HP-UX, IRIX, Sun OS; Group B - Visual C++, Visual C, C++, Visual Basic, PowerBuilder; Group C - JAVA, TCP/IP, HTML, MFC, CGI, PERL, ASP, COM/DCOM, Active X, MTS. Bachelor's degree or foreign equivalent in one of several limited fields: Computer Sci/Apps, Eng, Chem, Math or Physics. Salary is \$65,000 per yr. 40 hrs/wk. 9:00-5:00 p.m. Please submit resumes to: Mr. Terry Kinney, Mgr., Armstrong County Job Center, 1270 N. Water Street, P.O. Box 759, Kittingan, PA 16201. Job Order No. 2028564.

Senior Software Engineer (2 openings): Design, develop and implement computer software systems to determine feasibility of design and direct software testing procedures, programming and documentation. Work involves extensive travel and frequent relocation. Must have one year of experience in job offered or as a computer professional as well as one year of experience using 1 of Group A and 1 of Group B and 1 of Group C, OR 2 of A and 1 of B, OR 2 of A and 1 of C as follows: Group A - DB2, IBM3090, IBM ES9000, MVS, IMS, IDMS, Group B - CL/400, CICS, TSO, VSAM, Group C - TELON, COBOL, JCL, AS/400, RPG/400, COBOL/400. Masters degree in one of several limited fields: Computer Sci/Apps, Eng, Chem, Math or Physics. Will accept Bachelors with 5 years of progressive experience as a computer professional. Salary is \$75,000 per yr. 40 hrs/wk. 9:00-5:00 p.m. Please submit resumes to: Ms. Margaret Weckert, Mgr., Butler County Job Center, 227 West Cunningham Street, Butler, PA 16003. Refereeing Job Order No.: 7095634.

Client Server Solutions, Inc. an IT Co. in Bergen City, NJ, has multiple openings for: 1) DB2s w/ASP. Must have knowl of dbase tech, w/+ yrs exp. 2) SA/Programmer w/ z/ys exp dlvng multi-tier PFC applics in PowerBuilder using object oriented dsgn, inheritance, non-visual objects & data windows for RDBMS in a distributed envrmt using Sybase, Microsoft or Oracle. Write stored procedures & triggers on database to perform complex queries. Optimize & tune database & applics. BA in Comp or related field. Email resumes: PBJob@AndyBum.com or mail to HR Dept. Client Server Solutions, Inc. (PB Job) 299 Forest Ave, Ste R, Paramus, NJ 07652.

Sr. Software Engineer (perm) needed to design, develop, implement and support client server web-based data processing solutions using a variety of tools including C/C++ and Sybase. B.S. degree in Comp Sci or Bach degree in Comp Science. Math, Engg or a related field plus 5 yrs of relevant exp. incl at least 3 yrs exp in C/C++ and Sybase or a Master's degree in Comp Sci. Math, Engg or a related field plus at least 3 yrs of exp. Cl/400, Unix, Sybase, Norcross, GA area. Salary \$64K - 86K commensurate w/ exp. Mail resume to: ATS 3761 Venture Dr., Ste. 170, Duluth, GA 30096 ATTN: J0PDS001.

Software Engineer (perm) needed to design, develop and test, implement and support client server web-based data processing solutions using a variety of tools including C/C++ and Sybase. B.S. degree in Comp Sci or Bach degree in Comp Science. Math, Engg or a science-related field. 3 yrs exp in Unix, C, COBOL, and Oracle. Salary \$64K - 86K commensurate w/ exp. Mail resume to: ATS 3761 Venture Dr., Ste. 170, Duluth, GA 30096 ATTN: J0PDS001.

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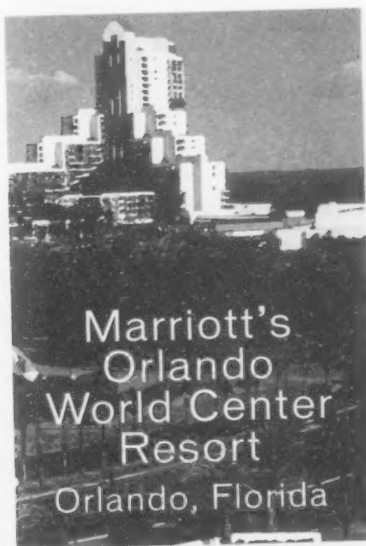
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Delphi Programmer/Analyst - assist in determining user requirements, writes business applications in Delphi version 4.0 with standard query language (SQL) server database, participates in code walk-through, testing and implementation activities to deliver business applications to user base; supports existing applications; develops new subroutines or expands program. Must have documented ability to program in Delphi version 4.0 for diverse business and technical applications. B.A. or B.S. degree in computer science or math and 2 years experience. Hours: Mon - Fri, 7:30-5:30 PM, Lowell, Ark. Salary: \$40-54,000/year, per experience. Apply at Ark. Emply. Sec. Dept., 1620 S 8 St., Rogers, AR or send 2 resumes to David Hayes, PO Box 2981, Little Rock, AR 72203, job order #94261.

Software Engineer - Develops and implements automated test systems to discover and resolve potential product malfunctions. Coordinates the development, procurement, installation and calibration of instruments and control devices needed to perform verification. Uses C++ to check for potential software hardware malfunctions or anomalies in systems development. Documents product development and tests system functions using Software Validation and Verification Reports (SVVR). Assigns tests to subordinates and oversees their execution. Required: Bachelor of Sci. degree in Biomedical or Comp. Engineering in addition to 1 year in a Medical Engineering Occupation. Must have exp. w/ Software Requirement Specifications, Software Validation & Verification Reports & C++ \$46,500/yr., Mon-Fri., 40hrs/week, 7am-3:30pm. Send resume in duplicate to Case # C101077, General Gully, DWE-ALC, P.O. Box 7972, Madison, WI 53707-7972.

Programmer Analyst, full-time, 8:00 a.m. to 5:00 p.m., \$55,000.00/yr. Job duties: design, develop and implement applications and integrate technical solutions to programming projects; analyze existing systems and applications and develop methods to improve system performance; and reduce processing costs; and participate in the design and development of new systems using the latest application tools and technologies. Job requirements: M.S. in Computer Science. Submit resume and Social Security number to: Indiana Department of Workforce Development, Attn: Mr. Gene Replige, 10 N. Senate Ave., Indianapolis, IN 46204-2277. Job ID: 8057668. Must be currently authorized to be permanently employed in the U.S.

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Software Engineer - Develops and maintains a wide range of application (user interface) and platform (communications, process control) software for a variety of platforms in connection with the company's design and manufacture of premium CT medical diagnostic equipment. Participates in all phases of the product development life cycle from the initial design through system testing to ensure compatibility with future products. Develops the User Interface in adherence with human interface standards in the industry (such as user centered design). Constructs software programs which will carry forward to future platforms. Develops system control code, including the development of state driven control structures and the event driven control of the system. Uses and develops software tools to support automatic code generation. Develops, implements and maintains computer communications structures utilizing TCP/IP communications protocol. Integrates and enhances Simple Interpret- ed Event Detection subsystem. Supports the design of the system, such as the remote diagnosis of the CT product and the periodic enhancement of the diagnostic capabilities. Develops device drivers for CT specific devices such as the Silicon Graphics IRIX operating system. Works on developing and integrating new architectures such as the Linux, Windows NT and VxWorks platform for medical system. Required: Bachelor of Science degree in Computer Science, Electrical Engineering or Electronic Engineering and four (4) years of experience in the position being offered (i.e., Software Engineer) OR four (4) years of experience in the related occupation of Technical Support Engineer or Developer. As part of the position being offered (i.e., in the related occupation), the applicant must have had experience in designing and developing software using the C and C++ languages on several platforms; had experience in user interface design and Parasol based modeling development for CAD/CAE applications; and had experience with system architecture design, software engineering principles and software reliability. Monday through Friday, 8:00 AM to 5:00 PM, 40 hours per week; \$70,000 annually. Qualified applicants submit two (2) copies of resume and cover letter to: Mike Brooks, File #C101089, DWE-ALC, P.O. Box 7972, Madison, Wisconsin 53707-7972. Reference File #C101089.

Client Server Developer/Analyst - IV. Supervise the design, development and implementation of software programs and applications by utilizing Java, Visual C++, C and accompanying development tools in Windows NT, Windows 95, and HP/UNIX operating environments. Manage all project operations, personnel and budgets; prepare project proposals for integration with client's existing software and hardware. Estimate project time of completion, personnel support (including systems analysis, programmers and tech staff) and material and budget resources. Schedule project segments; monitor and evaluate progress; design, installation and implementation of all software applications. Provide front-end user training, guidance and assistance. Req: Bach's degree in Comp. Sci., Engin., Math, or Systems and either five yrs of exp. in job offered or five yrs of exp. as a System Software Engineer or five yrs of exp. as a System Software Engineer. The five yrs of exp. must include one yr of exp. in the design and development of internet security applications using Java programming language, 40 hrs/wk, M-F 8:30am-5:00pm. Salary: \$65,000 per year. Please apply in person with resume in hand to any local Service Career Center or send a job resume to: KS Dept. of Human Resources, Attn: Jane W. Burbridge, 401 SW Topeka Blvd., Topeka, KS, 66603-5182. Applicants must have proof of legal authority to work in the United States.

Lead Software System Engineer - Serves as a technical lead in the development of display front end workstations for the company's advanced PET scanner. Designs and develops display Operator and Advanced Workstation (OWS & AWS) software architecture, functionality and performance tuning on Sun UltraSPARC and HP-UX platform. Integrates third party vendor software and leads company employees, contractors and research collaborators to complete software and algorithm intensive projects. Participates in the complete software development life cycle, including requirement analysis, design, implementation, testing, integration and customer documentation. Serves as a key in leading teams on project design, development and testing. Integrates CT with PET, mid-tier product and mobile PET. Designs and develops low level communication protocol (TCP/IP) to communicate between Operator Workstation (OWS & AWS) and subsystems such as Share (Reconstruction subsystem), Patient table and Gantry Engages in Unix system administration with special emphasis on NFS, NIS and DNS and shell scripting. Assists team in migration to single UNIX specification. Responsible for Common Desktop Environment (CDE) development (IPC), and X-Motif and multitasking software and reviewing software development. Acts as a lead software engineer in developing test plans and reviewing software development standards. Assists in the Software Quality process. Required: Master's Science degree in Computer Science or Electrical Engineering, and three (3) years of experience in the position being offered (i.e., Lead Software Systems Engineer) OR three (3) years of experience in the related occupation, the applicant must have had experience in analyzing and developing, testing and documenting display/front end workstation software for medical diagnostic equipment, including database, communication, operating system, hard copy and display development; had experience in low level communication protocols, TCP/IP, Controller Area Networks and RS232; had experience with X-Motif, 2D and 3D software development, as well as various programming languages, including C++, Object Oriented methodology, and assembly language; and had experience with multiple platforms, including UNIX, Windows NT, Windows 95, Monday through Friday, 8:00 AM to 5:00 PM, 40 hours per week; \$65,000 annually. Qualified applicants submit two (2) copies of resume and cover letter to: Mike Brooks, File #C101148, DWE-ALC, P.O. Box 7972, Madison, Wisconsin 53707-7972. Reference File #C101148.

Programmer Analyst - Sought by Clinton, IA consulting company to work in various unanticipated locations throughout the U.S. Under direct supervision, plan, develop, test, code and document computer programs applying knowledge of programming techniques and computer systems. Evaluate user requests for new or modified programs and design and develop software. Write program documentation to describe program development, logic, coding and errors. Use of IBM Mainframe, ES 9000, COBOL, SQL, CDS, VMESA, DMS, and AD/Cycle. Software applications including business software programs. Year 2000 Management Sciences, Information Systems, Electric or Electronic Eng. or its equivalent. Plus 2 years in the job offered or 2 years in a related occupation. Programmer Related exp. must include use of IBM Mainframe, ES 9000, COBOL, SQL, CDS, VMESA, DMS, and AD/Cycle. \$48,000/year, 40hrs/wk, 8 AM-5 PM. Based in Clinton, Iowa Workforce Center, 2740 S. 17th Street, Clinton, IA 52723-7040. Refer to Job Order No. IA 1100964.

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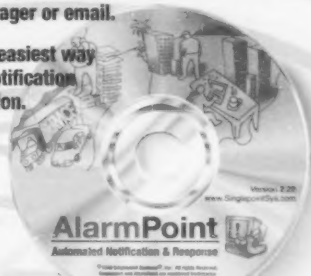
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— David Rose, United Way

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— Jim Perry, GTE

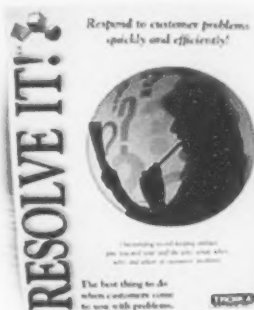


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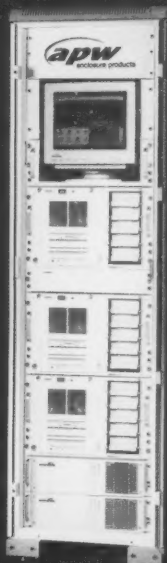
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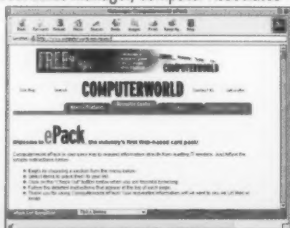
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GAINERS

PERCENT

Spyglass Inc.	34.1
Informatica Corp. (H)	33.0
Sapient Corp.	30.3
Business Objects SA (H)	27.5
Wink Communications Inc. (L)	24.7
Gateway Inc. (H)	22.1
Checkpoint Software Tech. Ltd. (H)	20.4
Open Market Inc.	19.6

DOLLAR

Juniper Networks Inc. (H)	30.31
Sapient Corp.	26.75
Informatica Corp. (H)	21.76
Checkpoint Software Tech. Ltd. (H)	17.39
Qualcomm Inc.	17.31
Business Objects SA (H)	15.31
America Online Inc.	12.56
Gateway Inc. (H)	11.75

LOSERS

PERCENT

Avid Technology Inc. (L)	-26.6
CBT Group Plc.	-26.0
Silicon Graphics Inc. (L)	-23.2
Electronics for Imaging Inc.	-22.2
Lexmark International Group	-22.1
Antec Corp.	-21.2
Open Text Corp.	-16.2
Compaq Computer Corp. (L)	-14.5

DOLLAR

Lexmark International Group	-20.94
IBM	-13.66
Antec Corp.	-12.56
Hitachi Ltd.	-10.75
Electronics for Imaging Inc.	-10.63
Hewlett-Packard Co.	-7.68
CBT Group Plc.	-7.06
Analog Devices Inc.	-6.13

Memory Price Increase Hits Dell

Firm feels aftershocks of Taiwan earthquake

BY DOMINIQUE DECKMANN

DELL COMPUTER CORP. (Nasdaq:DELL) stock took a hit after the company announced last Monday that higher memory prices would affect third-quarter earnings. The Round Rock, Texas-based firm's shares fell 3 1/4 to 38 1/16 on Tuesday, but it regained about half of that ground on Wednesday.

Though the memory price hike affects all PC vendors, Dell's stock appears to have suffered more than others.

"The [Taiwan] earthquake-related [memory-chip shipment] delays are most likely to hit direct vendors who have small inventory," says Jonathan

Ross, an analyst at ABN AMRO Inc. in San Francisco. But Dell's chief direct rival, North Sioux City, S.D.-based Gateway Inc. (NYSE:GTW), may find it easier to change product configurations to include less memory, Ross says, because it's stronger in consumer markets.

Ross also says Dell "seemed to be more involved than others" in Rambus Direct RAM, a new, faster type of memory technology from Rambus Inc. (Nasdaq:RMBS) in Mountain View, Calif.

When shipment of a crucial chip set from Intel Corp. (Nasdaq:INTC) that supports Rambus memory hit production delays, Dell had to scramble

to get enough traditional dynamic RAM from other suppliers, which drove up costs, Ross says.

But Daniel Kunstler, a senior equity analyst at J.P. Morgan & Co. in San Francisco, says, "That would only hold if Dell applied its [just-in-time] model blindly." He says he believes Dell has generally been successful in hedging against price hikes, with long-term contracts, for instance.

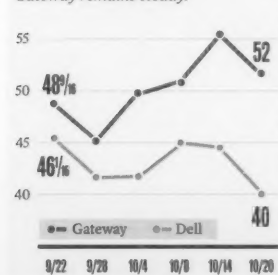
Jim Handy, a memory analyst at Dataquest in San Jose, says many original equipment manufacturers had become used to cheap, abundant supplies of memory and were cutting inventories.

Several research reports raising alarms about supply problems sent RAM prices up this summer and created a round of panic buying. Then, after the Taiwan earthquake, prices for a 64M-bit dynamic RAM chip peaked above \$20 — five times the price they were going for in June. But Handy says memory prices could drop to as low as \$6 for a 64M-bit DRAM chip by the end of next month, as DRAM manufacturers ramp up production. ■

INDUSTRY ALMANAC

Quake Aftershock

Since the Taiwan earthquake on Sept. 21, Dell stock has gone down, while Gateway remains steady.



52-WEEK RANGE

SOFTWARE UP 1.0%

ASIX	32.75	12.50	Active Software (H)	32.75	6.00	22.4
ADT	179.84	52.87	Active Systems Inc. (H)	179.84	52.87	6.6
ADRA	104.62	65.00	Adra Inc.	104.62	65.00	6.6
ADTN	19.87	8.12	Advent Technology Inc.	19.87	8.12	1.7
ADSC	49.43	17.50	Adventech Inc. (L)	49.43	17.50	6.6
ADVD	34.25	9.43	Adventech Systems Inc.	34.25	9.43	29.8
BMCS	73.12	30.00	BMCS Software Inc.	73.12	30.00	1.3
BSI	11.06	12.00	Business Objects S.A. (H)	11.06	12.00	27.5
CDN	36.09	9.12	Calderone Design Systems	36.09	9.12	5.1
CBT	30.50	8.18	CBT Group Plc.	30.50	8.18	26.0
CHP	102.50	70.87	Checkpoint Software Tech. (H)	102.50	70.87	20.4
CTKS	69.93	25.50	Cetus Systems Inc.	69.93	25.50	3.3
CDN	28.12	16.25	Cognex Inc.	28.12	16.25	4.4
CA	49.43	25.12	Computer Associates International Inc.	49.43	25.12	4.4
CPWR	40.00	16.37	Compuserve Corp.	40.00	16.37	3.3
DCIM	54.17	9.37	Documentation	54.17	9.37	3.3
EFX	44.87	21.50	Electronics For Imaging	44.87	21.50	22.2
HINTS	41.50	13.75	HIS Software	41.50	13.75	6.6
HTSL	36.12	9.87	Hypertek Software	36.12	9.87	6.2
IRC	10.75	12.43	IRC Systems	10.75	12.43	1.4
IFA	92.50	19.00	Intermedia Corp. (H)	92.50	19.00	30.0
FMX	14.00	4.87	Informa Software Inc.	14.00	4.87	30.7
INTC	27.00	15.12	Intel Corp.	27.00	15.12	14.4
JUNIP	55.00	26.43	Juniper Networks Inc.	55.00	26.43	30.7
EDS	38.10	15.37	J.D. Edwards & Co. (H)	38.10	15.37	7.2
LEO	26.10	10.37	Lexmark International Group	26.10	10.37	6.6
MAGR	55.11	10.37	Manugistics Inc.	55.11	10.37	29.8
MANI	17.37	5.25	Manugistics Group Inc.	17.37	5.25	8.4
MDR	10.00	7.00	Mediatech Inc.	10.00	7.00	1.4
MST	100.75	51.62	Microsoft Corp.	100.75	51.62	30.0
NETA	67.68	10.06	Network Associates	67.68	10.06	3.5
NSI	44.87	32.62	Novell Inc.	44.87	32.62	1.4
NOVL	31.00	12.62	Novell Inc.	31.00	12.62	6.6
ORCL	48.12	16.93	Oracle Corp.	48.12	16.93	6.6
PARC	22.26	11.62	Parsons Technology Corp.	22.26	11.62	6.6
PIST	26.37	11.50	PingPong Inc.	26.37	11.50	6.6
PIAR	53.75	33.00	Pearce	53.75	33.00	6.6
RATL	40.00	17.00	Rational Software Corp.	40.00	17.00	6.6
RHAT	135.25	40.00	Red Hat Inc.	135.25	40.00	6.6
QST	66.62	20.50	Quest Software	66.62	20.50	6.6
SAP	44.87	32.75	SAP AG	44.87	32.75	6.6
SCUR	29.00	2.25	Secure Computing Corp.	29.00	2.25	6.6
SE	48.43	17.93	Seeling Commerce Inc.	48.43	17.93	7.0
SNW	29.43	16.12	Shutterstock Inc.	29.43	16.12	6.6
SDRC	22.43	9.68	Structural Dynamics Research	22.43	9.68	6.6
SYBS	14.43	5.63	Sybase Inc.	14.43	5.63	13.1
SYMC	43.13	12.50	Symantec Corp. (H)	43.13	12.50	6.6
INPS	65.12	32.00	Symantec Corp. (H)	65.12	32.00	6.6
CTC	22.00	7.81	Systems & Computer Technology	22.00	7.81	6.6
WV	10.00	6.87	The World Wide Web	10.00	6.87	6.6
VNTV	19.11	8.00	The Vantage Corp.	19.11	8.00	6.6
THI	41.37	19.75	Thiessen Inc.	41.37	19.75	6.6
VTS	83.75	19.37	Versar Software Corp. (H)	83.75	19.37	6.6
WIND	33.43	11.25	Wind River Systems Inc.	33.43	11.25	6.6

52-WEEK RANGE

TELECOMMUNICATIONS UP 2.0%

AT	77.00	44.00	Atmel Corp.	77.00	44.00	3.7
ANDW	22.87	11.00	Andrew Corp.	22.87	11.00	3.7
AT	64.12	40.00	AT&T	64.12	40.00	3.7
ATL	51.00	24.38	Atmel Inc.	51.00	24.38	3.7
BEL	69.50	49.31	Bell Atlantic	69.50	49.31	3.7
BLS	31.37	37.75	Bell South	31.37	37.75	3.7
BRC	48.12	37.50	Broadcom Corp.	48.12	37.50	3.7
CMSC	42.59	21.75	Comcast	42.59	21.75	3.7
CO	39.62	20.67	Comcast Corp. (L)	39.62	20.67	3.7
CON	44.87	25.48	Comcast Communications Inc.	44.87	25.48	3.7
CSFR	30.13	12.12	Globalstar Telecom Inc.	30.13	12.12	3.7
ETE	78.50	56.43	ETE Corp.	78.50	56.43	3.7
NSN	43.62	18.12	Northern Telecom Inc.	43.62	18.12	3.7
SPOT	45.43	26.37	Spacenet	45.43	26.37	3.7
QCOM	224.68	24.50	Qualcomm	224.68	24.50	3.7
SCS	43.62	18.12	Scalable Communications	43.62	18.12	3.7
SON	68.18	32.18	Sprint Corp.	68.18	32.18	3.7
TEL	102.00	56.67	Telephone and Data Systems (H)	102.00	56.67	3.7
TEK	48.12	12.00	Telefonica Networks Systems	48.12	12.00	3.7
USW	60.00	51.00	US West	60.00	51.00	3.7
VIA	49.43	28.43	Viacom	49.43	28.43	3.7
VTC	48.12	18.12	Viacom Telecommunications Inc.	48.12	18.12	3.7
WCOM	16.75	50.12	WorldCom Inc.	16.75	50.12	3.7

52-WEEK RANGE

SERVICES UP 0.0%

ACM	31.25	15.87	Acclaim Corp.	31.25	15.87	3.7
ACS	53.00	17.50	Advanced Computer Services	53.00	17.50	3.7
AMC	40.00	19.75	American Mail Systems (L)	40.00	19.75	3.7
AUD	46.88	36.25	Automatic Data Processing	46.88	36.25	3.7
BSYS	101.87	11.37	Bugs Group Inc.	101.87	11.37	3.7
CATP	32.25	10.62	Cambridge Technology Pkts	32.25	10.62	3.7
CEN	40.50	16.62	Centel Inc.	40.50	16.62	3.7
CHP	79.50	13.75	Chorus Inc.	79.50	13.75	3.7
CDU	30.87	19.75	Comdore	30.87	19.75	3.7
CHP	30.12	8.25	CompuLink Horizons Corp.	30.12	8.25	3.7
CSC	74.37	49.31	Computer Sciences Corp.	74.37	49.31	3.7
DSI	70.25	46.00	Digital Systems Inc.	70.25	46.00	3.7
ESD	67.37	37.00	Electronic Data Systems	67.37	37.00	3.7
FIS	15.88	12.12	First Data Group	15.88	12.12	3.7
FSW	40.75	24.12	Fiserv Inc.	40.75	24.12	3.7
FTS	25.75	12.81	First Step Group (L)	25.75	12.81	3.7
NEA	43.62	17.12	Northern Telecom Inc.	43.62	17.12	3.7
NDA	52.25	21.75	National Data (L)	52.25	21.75	3.7
PAY	38.25	21.56	Paycom Inc.	38.25	21.56	3.7
PFS	101.88	12.50	Persol Systems Corp. (L)	101.88	12.50	3.7
REU	14.50	3.34	Renaissance Worldwide (L)	14.50	3.34	3.7
REV	25.12	11.06	Reynolds & Reynolds	25.12	11.06	3.7
SFE	101.88	12.50	Safeway Stores Inc.	101.88	12.50	3.7
LAPE	101.13	37.62	Sageant Corp.	101.13	37.62	3.7
SMC	73.12	30.50	Shaw Medical Systems	73.12	30.50	3.7
SYN	41.87	16.87	Sungard Data Systems	41.87	16.87	3.7
SYN	19.75	7.00	Syntel Inc.	19.75	7.00	3.7
TEC	47.25	14.50	Tech Data	47.25	14.50	3.7
TMC	39.50	17.00	Telcel Corp.	39.50	17.00	3.7
TSC	28.25	14.12	Total System Services Inc.	28.25	14.12	3.7
TSI	51.00	24.18	Transaction Systems Architects	51.00	24.18	3.7

52-WEEK RANGE

NETWORK OFF -0.1%

COMS	31.12	20.00	Comcast Corp.	31.12	20.00	3.7
ADCT	33.62	20.31	ADC Telecommunications Inc.	33.62	20.31	3.7
ADT	40.25	15.50	Adventech Inc.	40.25	15.50	3.7
ADTN	19.87	8.12	Adventech Systems Inc.	19.87	8.12	3.7
CS	10.93	7.81	Calderone Design Systems	10.93	7.81	3.7
EFX	44.87	21.50	Electronics For Imaging	44.87	21.50	3.7
ESD	75.50	26.87	Electronic Data Systems	75.50	26.87	3.7
ECOL	45.00	23.75	ECI Telecom	45.00	23.75	3.7
ENTR	43.62	12.12	Enterprise Technology Inc.	43.62	12.12	3.7
HRS	40.00	12.75	Harris Corp. (L)	40.00	12.75	3.7
HUM	69.27	32.62	Hughes Electronics Inc.	69.27	32.62	3.7

52-WEEK RANGE

SEMICONDUCTORS, CHIPS & EQUIPMENT OFF -0.8%

ADPT	43.63	11.87	Adaptive	43.63	11.87	3.7
AMD	33.00	15.58	Advanced Micro Devices	33.00	15.58	3.7
ALT	10.98	19.12	Altair	10.98	19.12	3.7
ATA	40.43	17.00	Analog Devices	40.43	17.00	3.7
AMAT	87.25	28.37	Applied Materials	87.25	28.37	3.7
ASML	14.62	20.12	ASML Lithography Holding	14.62	20.12	3.7
FCI	30.03	18.50	Fairchild Semiconductor Corp.	30.03	18.50	3.7
HPS	42.62	23.25	Heptech Corp. (H)	42.62	23.25	3.7
INTC	89.50	42.31	Intel Corp.	89.50	42.31	3.7
KLAC	79.50	26.87	Kla Instruments	79.50	26.87	3.7
LSI	75.75	21.25	LSI Logic Corp.	75.75	21.25	3.7
LSI	82.50	17.75	LSI Logic	82.50	17.75	3.7
MAXM	24.87	20.87	Max Integrated Products	24.87	20.87	3.7
MTI	85.00	22.75	Motorola Technology	85.00	22.75	3.7

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Main phone number (508) 879-0700
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Our Web address is www.computerworld.com.
All staff members can be reached via e-mail
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All IDG News Service correspondents
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MAIL ADDRESS

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Back issues (508) 820-8167

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CONTACTING CW EDITORS

We invite readers to call or write with their comments and ideas. It is best to submit ideas to one of the department editors and the appropriate beat reporter.

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Editorial Director, Print/Online Patricia Keefe (508) 820-8183

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Security, encryption, viruses	Ann Harrison (508) 820-8182

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Editorial Editor Allan F. Alter (508) 620-7714

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FEATURES WRITERS

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Business, technology topics	Gary H. Anthes (202) 347-0134
Business, technology topics	Steve Uffelder (508) 620-7745
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RESEARCH

Lorraine Cosgrove, research director;
Mari Keefe, editorial research specialist;
Keith Shaw, graphics coordinator

COPY DESK

Jamie Eckle, **managing editor/production** (508) 820-8202.
Jean Consilio, **assistant managing editor/production**.
Pat Hyde, **assistant managing editor/special projects**.
Jacqueline Day, Eugene Demaitre, Julie Dennis,
Michele Lee, Bob Rawson, **copy editors**.

GRAPHIC DESIGN

Tom Monahan, **design director** (508) 820-8218. Stephanie Faucher, **art director/features**. Mitchell J. Hayes, **art director/news**. John R. Brillón, Nancy Kowal, April O'Connor, David Waugh, **associate art directors**. Julie D'Errico, **graphic designer**. Rich Tennant, John Klossner, **cartoonists**.

ADMINISTRATIVE SUPPORT

Linda Gorgone, **office manager** (ext. 8176);
Connie Brown (ext. 8178); Lorraine Witzell (ext. 8139)
Gussie Wilson (650) 524-7035, **editorial assistants**

COMPUTERWORLD

Tom Monahan, **director, online and design** (508) 820-8218;
Sharon Machlis, **online news editor** (508) 820-8231;
Kathleen Ohlson, **reporter** (508) 820-8215; Jeremy Selwyn,
online services manager; David Ramel, **online production coordinator**;
Lisa Sydney, **online researcher**; Aaron Bishop, **audio engineer**.

CONTRIBUTING
COLUMNISTS

Joe Auer, James Champy, Michael Cusumano,
John Gantz, Dan Gillmor, Peter G. W. Keen,
Bill Laberis, David Moschella, Fran Quittel,
Paul A. Strassmann, Don Tapscott, Ed Yourdon

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Web Tools

check key applications before the Christmas season hits. Charles Schwab & Co.'s electronic brokerage division devotes 80 of its 300 information technology staffers to quality assurance of its biweekly application releases. Each of those companies has turned to commercial testing tools to help them stress-test their sites in the face of intense time-to-market pressures.

Even so, Schwab and KBKids.com often can't find the time to take advantage of their tools. And a year's worth of testing probably couldn't have helped Chicago-based Encyclopaedia Britannica Inc., which suffered a very public

crash last week (see related story, below).

A study by Newport Group Inc. in Barnstable, Mass., indicates that many companies do performance tests on their e-commerce applications before launch — about two-thirds of 117 companies surveyed earlier this year. Among those that didn't test, most later found scalability problems (see chart).

Newport Group analyst Billie Shea said she sees an uptick in the adoption of commercial tools. "I've followed the tools market since '94, and back then, it was like pulling teeth to get people to recognize the benefits. Now people are starting to seek out tools more," Shea said.

Users at last week's user conference of one of the leading tools vendors, Mercury Interactive Corp., said the best

they can hope for is lowering the odds that their sites will suffer performance problems.

"There are no panaceas," said Mickey Lutz, vice president of IT at PHH Vehicle Management Services. Yet now that the Hunt Valley, Md., company offers Web-based applications to help customers manage their vehicle fleets, it wouldn't consider cutting testing tools from its budget.

"This was not a debatable issue," Lutz said, noting that his company earmarks 7% to 15% of development costs to test engineering. Six years ago, the company didn't even have a quality assurance department.

Still, the nearly infinite possibilities of user behavior make testing an inexact science. "The problem with the nature of this technology is I don't know if you won't find the

Mercury to Launch Consulting Auction Site

Giving a new twist to the Internet auction boom, Mercury Interactive Corp. last week announced plans to host an online site where consultants can bid on projects posted by Mercury customers.

Customers often enlist consultants to help them set up the automated application tests they do using the Sunnyvale, Calif., company's software. On Mercury Interactive's Consulting Connection site (<http://econsulting.merc-int.com>) — due to go live next month — customers will be able to prioritize their job requests according to price, availability, loca-

tion and skills required. "I think it's an extremely innovative idea," said Jeff Sweeney, Internet testing manager at Jackson National Life Insurance Co. in Lansing, Mich.

At the same time, some customers wondered how an auction could work effectively for consulting services. Shawn Davison, vice president of technology and operations at KBKids.com LLC in Denver said, "Price is less important to me right now than quality and expertise, because speed to market is so important. Expertise is not a commodity."

— Carol Skiva

Britannica Site Falters

Launch offers lesson in server capacity

BY STACY COLLETT

B RITANNICA.COM'S IT staff worked into the weekend to triple the Web site's server capacity after record traffic brought it down on its first day of operation.

Observers said the snafu presents valuable advice to any company launching an e-commerce site: You can never have too much server capacity.

Hours after Chicago-based Encyclopaedia Britannica Inc. announced its new, free Web content Tuesday, the site faltered. Until now, the company's eb.com site had charged a \$5 monthly subscription fee and the Web site contained only encyclopedia content.

The new site features encyclopedia text plus news articles from 80 newspapers and magazines, as well as links to related Web sites.

Some Britannica.com visitors reported they couldn't reach the site at all, while others reached the site but

couldn't conduct searches.

"We experienced traffic on the first day of about 20 times normal capacity," said Britannica spokesman Kent Devereaux. "We thought we would see a huge spike [after the announcement] and then it would decrease. At about 3 p.m., [traffic] was still going up, so we made a decision to pull down the servers."

Encyclopaedia Britannica's reference Web sites have averaged 30 million page views per month, he said.

Project leaders spent weeks planning for the Britannica.com launch. For reliability and performance reasons, the company split its servers among three locations — Chicago, Herndon, Va., and Sunnyvale, Calif. "If one goes down, it won't affect the other," said Mike Willett, a project manager in quality assurance.

Testing tools were used to simulate data loads against various server arrangements at high-traffic volumes (see story

above). On the day of the launch, Devereaux said, backup servers were standing by, but they hadn't been configured yet.

CEO Don Yannias apologized for the outage in a letter on the site. "In many ways we have truly been victims of our own success. We had no idea that this volume of traffic would be achieved so quickly," he said.

Could the snafu have been prevented?

Vernon Keenan, Internet analyst at Keenan Vision Inc. in San Francisco, said it's hard to simulate in tests real-world latency and spikes in traffic, but Britannica could have been better prepared. "Somebody who has a venerable brand that doesn't think people are going to be curious to see

what they're doing on the Internet is a little clueless," he said. The site was expected to be back up on Saturday. ■

Carol Skiva contributed to this article.



CEO DON YANNIAS: Britannica's a victim of its own success

finding it difficult to carve out the time necessary to orchestrate the switch from their manual processes to automated testing. KBKids.com, for instance, estimated that 75% of its testing is done manually. Schwab, which experienced a site crash last week, wants to do more automated testing of its electronic brokerage applications. But the San Francisco brokerage's biweekly application release schedule makes it difficult for IT staffers to find time for the initial setup of the automation that in the long run could speed some testing, said Hugh Westermeyer, a vice president in Schwab's electronic brokerage division. ■

Testing Pays Off

When applications didn't scale as expected (52%)

- 60% Didn't do load or performance testing
- 26% Did test, late in the development process
- 8% Did postdeployment testing
- 6% Tested early in the development process

When applications scaled as expected (48%)

- 38% Did test, late in the development process
- 35% Tested early in the development process
- 21% Tested in the design/requirements stage
- 6% Didn't do load or performance testing

Base: Survey of 117 companies with annual revenue of \$200M or higher



FRANK HAYES/FRANKLY SPEAKING

Another fine mess

IF YOU DIDN'T READ last week's *Computerworld* cover story by Kathleen Melymuka, go read it now. I'll wait. OK, for those of you who can't find last week's *Computerworld* in that mess on your desk, the story was about a new accounting standard called SOP 98-1, issued last year by the American Institute of Certified Public Accountants. Don't laugh — when it comes to accounting, these guys are more powerful than Microsoft and twice as uncompromising. They wield absolute power over how your company's balance sheet will be calculated. And what they've decided means you'd better start making friends in Finance — and fast.

SOP 98-1 is officially titled "Statement of Position on Accounting for the Costs of Computer Software Developed or Obtained for Internal Use." Put simply, it says your budgeteers can no longer choose whether to write off the cost of building or buying software as an expense (as 60% of companies do) or capitalize it, spreading the costs over the useful life of the software (like the rest do). From now on, everybody must capitalize off-the-shelf software and programming costs but expense planning, implementation, maintenance and operation costs.

It's a nice, simple rule. But good luck applying it to the messy reality of software development.

Let's face it: In the past we got away with being very, very messy. Nobody really worried if our project tracking was sloppy or we buried some costs in slush funds. Or maybe a schedule would slip and to save face we'd officially "roll out" a nonfunctioning system, then finally get it working after some "maintenance." It all came out of the same budget, so who cared?

Now lots of people care. The SEC. Outside auditors. The spreadsheet jockeys in Finance. They'll all insist that every nickel be properly expensed or capitalized — no matter how complex or intermixed different kinds of work are.

Fixing bugs? Expense it. Adding functionality? Capitalize it. But what if it's all in the same routine and done at the same time? Or what if a function sits invisible for two years because you couldn't get it working — and then a bug fix makes it available to users?

Planning is expensed; development is capitalized. But for decades, we've been muddying the

line between planning and development, with CASE and RAD tools, code generators and iterative development. Is analysis planning? Is a use-case study development? What about a prototype? Or an application hacked together by users and "refined" by IT?

What a mess. That's why you need to make friends in Finance: to start educating them in how systems development actually works and

the long-term impact of planning, development and maintenance. If they don't understand those complexities, you'll be at each other's throats after every project over what goes in column A and what's in column B.

Worse still, if they don't understand, you might soon get a directive from on high telling you which kind of work to do — the kind you can expense or the kind you can capitalize.

Maybe you'll be instructed just to do work you can capitalize. That means budgets for planning, training and maintenance could be slashed. Or maybe you'll get word to focus on work that can be expensed. That could mean a lot more maintenance, retraining and workarounds instead of new software.

Understand, these decisions won't be based on what makes successful users, good systems or common sense. They'll be based on what makes the accounting numbers look best for

the next quarter.

So, for the sake of IT and the business, start making Finance your partner. Or you'll have a real mess on your hands. ▀

Hayes, *Computerworld's* staff columnist, has covered IT for 20 years. His e-mail address is frank_hayes@computerworld.com.



You'd better start making friends in Finance.

SHARK TANK

COMMON SENSUS: The Census Bureau is mighty proud of its new system that digitizes paper questionnaires. Ought to be: the bureau paid Lockheed Martin at least \$49 million for the data-capture software. Dig this: Whistleblower in Hiding tattles that after various snafus, including a dress rehearsal in which 10,000 questionnaires were botched (out of 150,000), the price tag has ballooned to \$128 million — maybe higher. Better yet, Whistleblower claims an in-house Census Bureau team developed tools that can do the job. Used public-domain software. Could run on a 486. Would've cost about 100 grand. Higher-ups didn't want to hear about it.

THE CTO at the Austin, Texas, division of one chip vendor displayed some cirrus — oops, curious — logic. Got cranky because his network password expired. Summoned the help desk to create a new one. Then got *furious* when he learned somebody else now knew his password. As our pilot fish says, "I guess he could've had the technician executed to resolve that problem." From a CFO we expect this. But isn't that *T* supposed to stand for "technology"?

MEMO TO PARAMETRIC Technology. The CAD software vendor: This is a joke, right? You haven't really raised your maintenance rates for 2000 by 0.27% because it's a leap year, have

you? A loyal pilot fish says you told him everything's been jacked up to account for Feb. 29. The Shark divided 366 by 365. Sure enough, came up with 1.0027. Good gag. This is a gag, right Parametric?

"Y2K FATIGUE" is now an honest-to-God malady. It's "beginning to occur in a public grown weary of hearing about this arcane computer problem — one that appears less real and less threatening than floods and earthquakes." That's U.S. State Department Inspector General Jacquelyn Williams-Bridges, speaking at a recent congressional hearing. Public, schmublic — she ought to be worrying about the real Y2K fatigue, in IT shops.

PSST. This is no lead-pipe cinch, but the Shark hears that when CEO Jack Welch retires next year, Robert Nardelli may take the helm at GE. Nardelli is now CEO of GE's Power Systems division, and he's enough of an IT guy that we can root for him. Under Nardelli, Power Systems has cranked out plenty of high-horsepower software for utilities. GE says nobody's been picked yet to fill Neutron Jack's shoes. Cross your fingers.

Cross your *T's*, too. And open your eyes. And e-mail Sharky a juicy surprise: sharky@computerworld.com. If your scoop runs, you get a cool Shark Shirt. For daily dirt, shoot over to computerworld.com/sharky.

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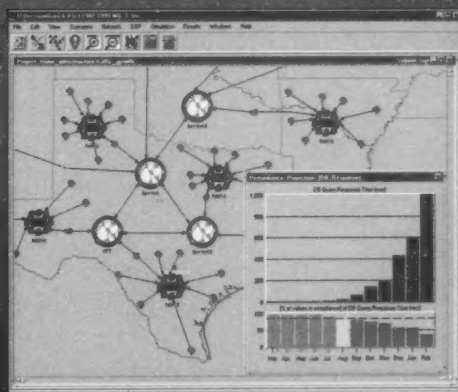


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You'll never guess what we were doing when we came up with the idea for our new server.

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